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During the Session, 1864-5, which will COMMENCE on the 3rd of OCTOBER, the following COURSES of LECTURES and PRACTICAL DEMONSTRATIONS will be given:—

- Chemistry—By A. W. Hofmann, LL.D. F.R.S., &c.
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- Natural History—By T. H. Huxley, F.R.S.
- Geology—By W. B. Smith, M.A. F.R.S.
- Mining
- Geology—By A. C. Ramsay, F.R.S.
- Applied Mechanics—By Robert Willis, M.A. F.R.S.
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Instruction in Mechanical Drawing, by the Rev. J. Haythorne, Edg. M.A.

The Fee for Students desirous of becoming Associates is 30*l.* in one sum, on entrance, or two annual payments of 20*l.*, exclusive of the Laboratories.

Pupils are received in the Royal College of Chemistry, the Laboratory of the School, under the direction of Dr. Hofmann, and in the Metallurgical Laboratory, under the direction of Dr. Percy.

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For a Prospectus and Information, apply at the Museum of Practical Geology, Jermyn-street, London, S.W.

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There is a Laboratory at the School, and Lectures by the Head-Master are given regularly on the Experimental and Natural Sciences.—For the Prospectus apply to the Head-Master, Clapham, S.

MATRICULATION of the UNIVERSITY of LONDON.—By permission of the Council of University College, a CLASS will be held at University College, by Mr. TALFOURCELY, 1, London, and Mr. W. A. WATSON, B.A. London, to PREPARE PUPILS for Examination in January, 1865. The Class provides instruction in Mathematics, Natural Philosophy, Classics, and the English Language, and will be held daily (except on Saturdays), from 6 to 8 P.M., commencing on the 13th of October. Fee for the Course, 3*l.*—For further particulars, application may be made to Mr. WATSON, 60, Oakley-square, N.W., on Mondays or Wednesdays, between 3 and 6 P.M.

UNIVERSITY OF LONDON MATRICULATION, January, 1865; and Cambridge Local Examinations, December, 1864. The REV. WILLIAM KIRKUS, LL.B. and the Rev. E. MAY DAVIS, M.A., PREPARE CANDIDATES for the MATRICULATION. Considerable time is given to thorough preparation for the Civil-Service and Oxford Local.—VACANCY for TWO BOARDERS.—Apply to the Rev. W. KIRKUS, Hackney, N.E.

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COLLÉGE IMPÉRIAL DE DIEPPE (University of France) will RE-OPEN on the 4th of OCTOBER.

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## UNIVERSITY OF GLASGOW.

## WINTER SESSION, 1864-5.

The SESSION will be OPENED on MONDAY, October 31, at 12 o'clock, when an ADDRESS will be delivered by the PRINCIPAL.

The University Classes will meet as follows, daily, unless otherwise specified:—

## I.—ARTS.

Tuesday, 1st November.

Classes.	Hours.	Professors.
Humanity, Junior	8 and 11 A.M.	
Senior	8 A.M. and 1 P.M.	Mr. Ramsay.
Private	1 P.M.	
Greek, Juniors, Tyrones	10 A.M.	
Professors	10 A.M.	Mr. Lushington.
Senior	8 A.M. and 2 P.M.	
Private	2 P.M.	Mr. Veitch.
Logic and Rhetoric	9 and 11 A.M.	Mr. Veitch.
Moral Philosophy	8 and 10 A.M. (15th Nov.)	Dr. Fleming.
Political Economy	1 P.M. Tu. and Th.	Dr. Fleming.
Natural Philosophy	9 and 11 A.M.	Mr. Wm. Thomson.
Physical Laboratory	9 A.M. to 4 P.M.	Mr. Wm. Thomson.
Mathematics, Juniors	12 noon.	Mr. Blackburn.
Astronomy	10 A.M.	Mr. Grant.
Civil Engineering and Mechanics	4 P.M.	Dr. Rankine.
English Language and Literature	4 P.M.	Mr. Nichol.

## II.—THEOLOGY.

Thursday, 3rd November.

Divinity, Junior	1 P.M.	Dr. Caird.
Senior	12 noon.	
Hebrew, Junior	10 A.M.	
Senior	9 A.M.	Mr. Weir.
Private	9 A.M.	Mr. Weir.
Arabic	9 A.M. Tu. & Th.	Dr. Jackson.
Ecclesiastical History	11 A.M.	Mr. Dickson.
Biblical Criticism	10 A.M.	

## III.—LAW.

Tuesday, 1st November.

Scottish Law	9 A.M.	Mr. Skene, Advocate.
Conveyancing	4 P.M.	Mr. Kirkwood.

## IV.—MEDICINE.

Tuesday, 1st November.

Chemistry	10 A.M.	
Practical Chemistry	12 noon.	Dr. Anderson.
Chemical Laboratory	9 A.M. to 4 P.M.	Dr. Anderson.
Practice of Physic	10 A.M.	Dr. Gardner.
Anatomy	11 A.M.	
Anatomical Demonstrations	2 P.M.	Dr. Allen Thomson and Demonstrator.
Practical Anatomy	10 A.M. to 4 P.M.	
Material Medica	11 A.M.	Dr. J. A. Weston.
Forensic Medicine	4 P.M.	Dr. Rainy.
Botany (in Summer)	1 P.M.	Dr. Walker-Arnott.
Surgery	1 P.M.	Dr. Lister.
Midwifery	3 P.M.	Dr. Parson.
Institutes of Medicine	4 P.M.	Dr. A. Buchanan.
Natural History (in Summer)	1 P.M.	Dr. Rogers.
Ex. (Waltonian Lectures), in Summer	4 P.M.	Dr. Mackenzie.

The Office of the Registrar will be open for the purpose of Matriculation, on and after Monday, October 17, daily, with the intervention of the holidays at the Sacrament. The Matriculation-Fee is 1*l.* for the Academic Year.

DUNCAN H. WEIR, M.A., Clerk of Senate.

Glasgow College, September, 1864.

TO SCOTTISH NATIONAL MEMORIAL

## TO

H.R.H. THE PRINCE CONSORT.

H.R.H. THE PRINCE CONSORT.

THE COMMITTEE of ADVICE nominated by HER MAJESTY are now prepared to receive APPLICATIONS, to be submitted to Her Majesty, for the SCOTTISH NATIONAL MEMORIAL to the PRINCE CONSORT, about to be erected in Edinburgh, or its immediate neighbourhood.

Of the SITES which have been suggested for the MEMORIAL, the most eligible appear to be:—

1. A knoll on the Spur or Ridge running N.N.E. from Arthur's Seat, and about 540 feet above the Sea.
2. West Princes-street-gardens, at the foot of Frederick-street or Castle-street.
3. East Side of Charlotte-square-garden, facing George-street.
4. The Queen's Park, in the immediate neighbourhood of Holyrood Palace.

The Committee, however, desire especially to direct the attention of Artists to the first-named of these SITES, which offers many advantages. The position is commanding, the surrounding position would be seen by persons approaching Edinburgh at a greater distance, and from a wider circle, both of the city and the country than any other available situation.

At the same time, it is not desired absolutely to preclude the suggestion of any other SITE which an Artist may consider specially suitable for his Design.

The amount of Funds at the disposal of the Committee for the erection of the Memorial is 12,000*l.*; and the Committee regret that they are therefore unable to offer premiums, or to remunerate any unremunerated Contributors for their Design.

It is requested that all Models and Drawings, not already prepared, may be furnished on a scale of one inch to the foot.

Designs can be received after the Tenth day of DECEMBER.

W. S. WALKER, Honorary Secretary.

124, George-street, Edinburgh, 5th September, 1864.

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A few Pupils received as BOARDERS.

Prospectuses may be had at the College.

JANE MARTINEAU, Hon. Sec.

TO STUDENTS.—For Classics, School Books, New and Second-hand, British or Foreign, Orbs, Keys, Helps for all the Examinations, apply to JOSEPH POOLE, Booksellers'-row, Strand. Send two stamps for Catalogues.

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SAMUEL BEVAN, Secretary.

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Contents for OCTOBER. No. DXXVI.

- I. WOODBURY. By Mrs. BUSHBY. Part II.
- II. KATHERINE SOUTHEY. IN MEMORIAM. By NICHOLAS MICHELL.
- III. LIFE AND WRITINGS OF ALEXANDER WEILL. IV. A VOCAL EXERCISE IN TWO PARTS. By FRANCIS JACOX. Part I.
- V. COTTON POSSIBILITIES. By ALEXANDER ANDREWES.
- VI. STRATHMORE. By the Author of 'GRANVILLE DE VIGNE.' Part XVI.
- VII. THE AMERICA OF AN AMERICAN.
- VIII. CONSTITUTIONAL PRUSSIA.
- IX. ARCHBISHOP WHATELY.
- X. THE QUEST. Chaps. XVIII. and XIX.
- XI. ANDREW HOFER. Part II.

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THE WESTMINSTER REVIEW.—ADVERTISEMENTS for insertion in the next Number should be sent to the Publishers by the 27th: BILLS by the 28th.

London: Trübner & Co. 60, Paternoster-row.

JOURNAL of the STATISTICAL SOCIETY, for SEPTEMBER, Vol. XXVII. Part III., just published. Price 3s. 6d.

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JOURNAL of the INSTITUTE of ACTUARIES.

The INDEX to the first Ten Volumes of this Work is now ready for delivery, and may be had of the Publishers, C. & E. Layton, 190, Fleet-street, London, Dépot for Books on Assurance, Life, Fire and Marine.

### THE NEW PAPER.

T I T A N I A.—See THE ARROW, No. 5, published next Tuesday. Office: 23, Tavistock-street, Strand; and all Booksellers and Railway Stations.

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III. THE BLUE WARBLER.

IV. THE RIVAL BEAUTIES. A TRUE STORY OF LIFE IN CAWPORE. By J. H. COOPER.

V. THE COURTS OF LOVE IN PROVENCE.

VI. CURIOSITIES OF INDO-EUROPEAN TRADITION AND FOLK-LORE.

VII. NAPOLEON AND THE BURIED TREASURE IN PERSIA. By DR. MICHAELSEN.

VIII. THE STORY OF LOUISE AND HER LOVERS.

IX. THE COUNTESS OF PARABÈRE.

X. OUR LITTLE LIFE. DREAM-FRAUGHT, SLEEP-ROUNDED. A CUE FROM SHAKSPEARE. By FRANCIS JACOX.

In the NOVEMBER NUMBER will be commenced

THE HOUSE OF SEVEN CHIMNEYS:

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1. USE AND INCREASE (with Wood Engraving for "October" month).

2. AUDI ALTERAM PARTEM (No. IV.) or, Some of the Ordinary Objections against Total Abstinence particularly Discussed. By the Rev. G. W. Butler, M.A., Wickham Market, Suffolk.

3. PRAY FOR THE DRUNKARD.

4. WAIFS AND STRAYS—No. X.: Facts, Incidents, and Reflections. By "Our own Gleaner." Subject: "Cases of Conscience."

5. DUTY OF AVOIDING TEMPTATION. Archbp. Sumner.

6. HARVEST-HOME AT PAVENHAM.

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12. A SUGGESTION AND AN INQUIRY.

13. NOTES AND QUERIES. By the Rev. William Caine, M.A.

14. MONTHLY LETTER. (From our own Correspondent.)

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Radiant Light and Heat (Illustrated). By Balfour Stewart, M.A. F.R.S.

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The Formation of Coral (Illustrated). By Professor Lacaze-Duthiers, Paris.

The Construction and Mechanical Properties of Submarine Telegraphs (Illustrated). By Wm. Fairbairn, LL.D. F.R.S.

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LONDON, SATURDAY, SEPTEMBER 24, 1864.

## LITERATURE

*A Mission to Gelele, King of Dahome. With Notices of the so-called "Amazons," the Grand Customs, the Yearly Customs, the Human Sacrifices, the Present State of the Slave Trade, and the Negro's Place in Nature.* By Richard F. Burton. 2 vols. (Tinsley Brothers.)

The legend of the Amazons has always interested, and will always interest, the male imagination. The story of a nation of female warriors, loyal, fierce, and brave beyond the rivalry of men, is nearly as old and respectable as history itself. Hercules and Bacchus are said to have met these shining troops in battle. Achilles encountered them at the Siege of Troy. A queen of these virgins is said to have visited Alexander the Great. Troops of them fought against Pompey. In Africa, in America, they appear no less frequently than in Europe and Asia; in fable, in rumour, in poetry, and in fact. In our early books of travel they are constantly met: brave creatures, with strong arms and unpitying hearts. Alvarez found them in Abyssinia, Orellana heard of them on the Amazon. Of the many clever men who speak of these hardy and ferocious soldiers few express any doubts of their undesired and undesirable existence. Even Bacon wrote against them as if their polity, their discipline, and their supremacy were not, in his opinion, idle dreams. He asks whether such a preposterous government, "against the first order of nature, for women to rule over men," ought not to be considered void and to be suppressed? The grandest river in America received its name from them, though they have not been found on its banks, where the Spaniards placed them, any more than that El Dorado which the same people placed in the same region of the globe.

Every schoolboy knows how devoutly the Greeks believed in the Amazonian legends. Some of the finest pictures and sculptures of antiquity represented either battles or figures of these virgin forces. They wear a helmet and carry a lance. They are nearly always handsome, with long hair and rounded limbs, which the short kirtle very much displays. These figures are found on a thousand antique vases, gems and medals, as well as in statuettes of bronze and marble. Several hundred examples may be seen in the British Museum: still more in the Vatican and Capitol at Rome. The painted portico at Athens was illustrated with a battle of the Amazons. Artemis had the same subject sculptured round the Mausoleum. Sometimes the virgins are on horseback, but commonly they are on foot. The right breast is always bare. From the grace with which they are made to wear and wield their weapons, these creatures, bright like Diana and brave like Pallas, have always struck the fancies of poets and artists with an irresistible charm.

So we are very glad to hear about them anywhere, either in the realms of art or in the dominion of fact; and now, in the accounts of Commodore Wilmot and Capt. Burton, we receive the amplest confirmation of a tale which was previously known, but generally discredited, of there being in the African town of Abomey a real Amazonian army. True, the African Pallas, even when painted by her friends, must be confessed a shade less charming than her Asiatic sister. Hippolyte is at the worst a brilliant fury. A Greek hero might have fallen in love with Penthesilea. The painter of the Portico at Athens and the sculptor of the Frieze at Halicarnassus equipped

their warlike dames in oriental arms, and gave to the ardent combatants some of that Syrian beauty which in case of capture might have induced an amorous chief to send them into the gynaeceum instead of into the slave-market. It must be wholly different, we should think, with one of King Gelele's darksome troop. What a victor could do with a Dahoman captive, unless he could lose her like an unpleasant dog, it is hard to say. A soldier in Whydah is said to have tried the experiment of taking one of these Amazons to wife. The martial lady would not submit to love, and her infuriated conqueror knocked her on the head.

The warlike virgin is the true heroine of Capt. Burton's book. She is figured on the frontispiece. She manoeuvres through many chapters. She has taken possession of the traveller's mind. So powerfully is Capt. Burton swayed by this hard feminine influence, that every object in nature seems for a moment, in his jaundiced eyes, to take form and colour from the typical Amazon of his fears. A storm comes down, raging like a jealous wife. Lightnings flash like the fury in weeping eyes. Thunders break like claps of feminine obtrusion between fits of sobbing. Tempests pass away in ladylike sulks. Even in his incidental illustrations of African life, Capt. Burton proves himself a slave to the Amazonian superstition; and all woman's weaknesses come in for rough-and-ready treatment at his hands. After saying that an amiable husband at Fernando Po, who suspects his wife, cuts off, first her left hand, then her right, and, lastly, cuts her throat, "a very just sequence," he adds, by way of personal verdict on the morals involved in the suspicion and punishment of domestic disloyalty, "In Northern Europe and America the injured husband kills the lover; in Asia and Southern Europe he kills the wife. Which proceeding is the more sensible? Can any man in his senses believe in the seduction of a married woman? *Credat Cresswell Cresswell!*" And so it is throughout these volumes. Capt. Burton is by courtesy the Colonel of an Amazonian corps; and it must be a grief to him, we should imagine, that a stern regard for fact constrains him to speak somewhat disrespectfully of his troops.

According to the ungallant Captain, the ladies of Dahomey have no great beauty to boast. "I regret to say that not a pretty face appeared; most of the fair sex had sooty skins, and the few hours showed negro features." This is said in the capital, and of the Court ladies. Your Dahoman women carry arms because they are too ugly to provoke love, and cut men's throats because they have no chance of winning their hearts.

Our first view of the female army is rather picturesque than seductive:—

"The first of the 'Amazons' made their appearance. The four soldieresses were armed with muskets, and habited in tunics and white calottes, with two blue patches, meant for crocodiles. They were commanded by an old woman in a man's straw hat, a green waistcoat, a white shirt, put on like the breeches of the good King Dagobert—*à l'envers*—a blue waistcloth, and a sash of white calico. The virago directed the dance and song with an iron ferule, and her head was shaded, by way of umbrella, with a peculiar shrub, called on the Gold Coast 'God's Tree.' The few men showed us some attempts at tumbling and walking upon their hands. Two of the women dancers were of abnormal size, nearly six feet tall, and of proportional breadth, whilst generally the men were smooth, full breasted, round-limbed, and effeminate-looking. Such, on the other hand, was the size of the female skeleton, and the muscular development of the frame, that in many cases femininity could be detected only by the bosom. I have no doubt that this physical superiority of the 'working sex,'

led in the Popo and Dahoman race to the employment of women as fighters. They are the domestic servants, the ploughboys, and the porters, and Gallegos, the field hands, and market cattle of the nation,—why should they not also be soldiers? In other matters they are by no means companions meet for men: the latter show a dawn of the intellectual, whilst the former is purely animal—bestial. Hence, according to some, the inordinate polygamy of the race."

But how does this asserted bestiality of the Dahoman woman promote polygamy? Surely the males, with "a dawn of intelligence," are not drawn into marrying many wives by the animal character of the women. There must be an error of the pen in this sentence. Again, the fact of there being a large female army must tend in a great degree to lessen the inducements to polygamy. Be it remembered, that the Amazons described by Capt. Burton are not like those described by Alvarez; for the Abyssinian ladies took husbands to themselves, though they kept these encumbrances in that state of subjection against which Bacon makes his protest. The Dahomey warriors are all unmarried. They live, it is true, under the fiction of being the king's wives; but this is an idle form. Here and there a pretty ensign may attract her sovereign's eye; but, on the whole, Gelele keeps his harem and his fighting women quite distinct. As their English commander observes:—"Soldiery in celibacy must be one of its rules, or the troops will be in a state of chronic functional disorder between the ages of fifteen and thirty-five." But then the fact of this celibacy must surely be to prevent the men indulging in a very ample sin of polygamy.

The number of these female troops has been given at 20,000; but this is now said to have been a gross exaggeration. Capt. Burton sets the number very much lower,—between 1,000 and 1,500 perhaps.

"As a rule the warriresses begin to fatten when their dancing days are passed, and some of them are prodigies of obesity. The flower of the host was the mixed company of the young Amazons lately raised by the King; this corps, standing to the north of the palace yard, and on the right of the throne, was evidently composed of the largest and finest women in the service. Behind it stood its band, a Chingufu or African cymbal, two small tom-toms held under the arm, and four kettledrums of sizes, beaten with hand or stick. The newly-chosen company apparently contained two hundred, and the whole court certainly did not show more than one thousand. Some Amazons, however, are now absent, attacking, I have said, a village in the Makhi country, which distinguished itself by grossly insulting the King, by threatening to kill him and his army."

We have not before had so exact and so pictorial a description of these ladies, in their bravery of the camp, as Capt. Burton supplies:

"The gala-dress of the guardesses was decent, and not uncomely. A narrow fillet of blue or white cotton bound the hair, and the bosom was concealed by a sleeveless waistcoat of various colours, giving freedom to the arms, and buttoning in front like that affected by Hausa Moslems. The loin wrapper, of dyed stuff, mostly blue, pink, and yellow, extended to the ankles, and was kept tight round the waist by a sash, generally white, with long ends depending on the left. The body toilette was rendered more compact by an outer girding of cartridge box and belt, European-shaped, but homemade, of black leather, adorned with cowries; or of bandoleers, containing in separate compartments twelve to sixteen wooden gunpowder boxes, like cases for lucifer matches. The bullet-bag, with a few iron balls, hung by a shoulder-strap to the dexter side, and was preserved in position by being passed under the cartridge-belt. All had knives, or short Dahoman falchions, in shape not unlike, though smaller than, the most fatal—to the wearer of all weapons, the old French *briguet*. The

firelock, a good solid Tower-marked article, was guarded by sundry charms, and protected from damp by a case of black monkey-skin tightly clasping the breeching, and opening to the rear. Many had long tassels dangling from the barrels."

In this droll country, women have precedence of men, for the palace is the state, and to please the amorous and despotic king is the whole business of life. No despotism known to civilized men equals that of an African chief. "By the state law of Dahomey, as at Benin, all men are slaves to the king, and most women are his wives. The blood-royal is the only freedom in the country, and it probably does not exceed two thousand souls." This simple rule makes everything easy. Gelele is a god, and in all ages of the world women have been the ministers of the gods. In theory, all the women of the country are the king's wives, and a great number of them are really so to the extent of not being able to marry any other man. The harem itself is full to overflowing with the dark beauty of the Tropics. Gelele takes to himself every pretty face for which he has a fancy. But still, one cannot help seeing that this theory of all the women being his wives has practical limitations imposed by nature. It is only by a figure of speech that the Amazonian guards can be called royal wives. One finds, too, that nature will revenge itself for these restraints on tropical flesh and blood by acts of conventional disloyalty to the tyrant's bed. On Capt. Burton's march through the country an incident of a domestic kind delayed the King:

"Not less than 150 'Amazons' were found to be pregnant—so difficult is chastity in the Tropics. They confessed, and they were brought to trial with their paramours. The king has abolished the 'Brehon judges' established by his father: the malversation of these 'justices in eyre' rendered reference to them like 'going,' as the old traveller has it, 'to the Devil for redress.' He now investigates each case personally, often sitting in judgment till midnight, and rising before dawn on the next day; moreover, every criminal has a right of personal appeal to him. The crime was *lesse-majesté* rather than simple advocacy; all the soldieresses being, I have said, royal wives. Eight men were condemned to death, and will probably be executed at the Customs. The majority were punished either by imprisonment or by a banishment to distant villages, under pain of death if they revisit the capital, and some were pardoned. The partners of their guilt were similarly treated. Female criminals are executed by officers of their own sex, within the palace walls, not in the presence of men. Dahomey is therefore in one point more civilized than Great Britain, where they still, wondrous to relate, 'hang away' even women, and in public."

Such offences will occur in the best regulated of African courts: even the classical Amazons were suspected of nursing susceptibilities and preferences beneath their coats of mail.

What can be done by court etiquette to prevent such scandals is done at the court of King Gelele. No man is suffered to approach the harem. When the ladies go out to fetch water from well or river they are guarded from masculine and admiring eyes with extreme rigour:

"At the earliest dawn the women slaves of the palace, who are shut up during the hours of darkness, wend their way in long lines, carrying huge pots on their heads. They claim the road, which is consequently provided with a number of foot-made offsets. At the words 'Gan ja!'—'The bell comes!'—even if it is tinkled by a slave girl-child four years old, the native must throw himself 'into the bush,' that is to say, out of the road, and await with averted face till the long train has passed. If a palace water-pot be broken, the nearest male would be accused and get into trouble. When out shooting in the morning, we were often called to by these slaves, telling us not to startle them. The Dahoman officials show their loyalty by 'clearing

out' as far and as fast as possible. If a stranger does only what is strictly necessary, one woman will say, 'He is a white, and knows no better!' and the other will reply, 'And has he no law in his own land?' The lower, the older, and the uglier the slave girls are, the louder and longer they tinkle—which is natural—and almost all of them seemed to enjoy the ignoble scamper of our interpreters and hammock men, whom the old women order to look the other way. At times, men and boy water-carriers for the palace, known by their switches, arrogate to themselves the same right. This is one of the greatest nuisances in Dahomey: it continues throughout the day; in some parts, as around the palace, half a mile an hour would be full speed; and to make way for these animals of burthen, bought perhaps for a few pence, is, to say the least of it, by no means decorous."

Such a custom must be troublesome in the extreme; but every traveller has seen the same sort of thing in Cairo and Constantinople, but less rigorously enforced, as must be the case in a great city.

The fact of women having the supremacy over men in Dahomey, finds an expression in every part of their social and ceremonial life. The king, to whom they are all slaves alike, is not to be treated as a male—as a man, but only as a god. He is not as other men, and not to be judged as other men. He is a being set apart from his race: a prince, a priest, a duality. Gelele has a double name, a double character, a double function. One part of him, that called Gelele, for instance, rules the city; another part of him, that called Addo-kpon governs the bush—that is to say, the country and farmer folk. The latter has his palace about six miles from the capital—his high officers, male and female, his wives and eunuchs. Criminals and victims are set apart for him at the Customs. All this takes him out of the category of a mere mortal man; so that his supremacy is not considered as breaking the law of woman's ascendancy. Corresponding to this duality in the king, there is a distinct duality in the State. All offices are feminine and masculine; there is a female Archbishop of Canterbury and a male Archbishop of Canterbury; a female Premier as well as a male; a female Commander-in-Chief as well as a male. Then, the king has two Courts, masculine and feminine. The former Court never enters the women's palace, the latter never quits it except on public occasions. The high officers of both Courts correspond in name and dignity; there are, for instance, the female "min-gan," and the man "min-gan," the she-meu and the he-meu, and the woman's officer is called the "Ho," or Mother of the men.

This Mother of the men is a rather droll institution; but one which springs very easily from the other facts of woman's lead at Court. Every poor man, every stranger in Rome required to have a protector, a patron. Though the name is not used, the thing is common enough still in Asiatic countries. In Dahomey the patron is a lady, and bears the title of Mother. The king must have a mother; if not the one who bore him, an adopted one in her place. The office is that of a perpetual Sultanate. A king may die, but a king's mother is immortal. Gelele's actual parent is now alive; when she departs, he must supply her place by selection. For each monarch in the dynasty there is an old woman mother. The "mothers" of the high officials are the corresponding honours. For instance, the she-Min-gan is properly called the "he-Min-gan's mother." Many persons in Dahomey have two "mothers," an old one for the last and a young one for the present reign. Visitors communicate with the "mothers" of their several nations. Even strangers in the country must have

mothers; but one lady is often good enough to accept the office for many unruly children of the same nation. There is an English mother—a person of great consequence, who expects presents from her protégés. Some resident merchants have two mothers—one given by the late, the other by the present king. Royalty itself is not exempt, even in the grave, from this tyranny of the sex: there being mothers for all the deceased rulers. Capt. Burton is of opinion that the origin of this exceptional organization of society may be traced to the masculine physique of the women enabling them to compete with the men in bodily strength, nerve and endurance. It is the same with most of the races inhabiting the Delta of the Niger, where feminine harshness of feature and strength of form rival the masculine. "The custom is of old date in Yoruba, and our histories depict the 'mino,'—'our mothers,' vulgarly called Amazons—before the birth of the late King Gezo, who used to boast that he had organized a female army." Capt. Burton says the late king depended on this female force to check the turbulence and treachery of his subjects, and to cause rivalry in the field by breeding jealousy between the sexes. Of the way in which this force was organized we have a full account. The late king, we are told, ordered every Dahoman to present his daughters, of whom the most promising were chosen, and trained to arms. Gelele, the present ruler, causes every girl to be brought to him before marriage, and retains her at his pleasure in the palace. Of Gelele's Amazons about two-thirds are said to be maidens. The remaining third has been married. That an element of desperation might not be wanting, women sentenced to death are given to the king, and are duly enlisted. Besides these criminals, "the Xantippe, who make men's hours bitter, are very properly put into the army." The fighting women are not *de facto* married to the king, but marriage may take place, at his discretion. The first person that made the present ruler a father was one of his colonels.

The Amazons affect male attire, especially when in uniform. There is nothing savage or terrible in their appearance. When young, they are compelled to dance and to take violent exercise, which render them somewhat lean, and, as they advance in years, they grow in weight. The troops are not divided into regiments. There are, however, three distinct bodies, as in the male army. The Fanti company takes the centre, and represents the body-guard. The king generally pays "distinguished strangers" the compliment of placing them in command. Capt. Burton was made an officer, but not entitled to inspect his corps. The other two divisions are the wings, right and left. The three corps consist of five arms, under their several officers, namely:—1. The Agbarya, or blunderbuss women, who may be considered the grenadiers. They are the biggest and strongest of the force, and each is accompanied by an attendant carrying ammunition. With these rank the carbineers, the bayoneteers, and a company armed with heavy weapons, and called Gan' u' ulan', or "Sure to kill." 2. The Elephant hunters, who are held to be the bravest. Of these women, twenty have been known to bring down, at one volley, with their rude appliances, seven animals out of a herd. 3. The Nyekplo-hen-to, or women armed with the huge razors, of which an illustration lately appeared in the English papers. 4. The infantry, or line's-women, forming the staple of the forces; from them, as in France, the *élite* is drawn. They are armed with Tower muskets, and are well supplied with ammunition. But they manoeuvre with precisely the precision of a flock of sheep, and they are too

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light to stand a charge of the poorest European troops. Personally they are clean; they are hard dancers, indefatigable singers, and, though affecting a military and swaggering gait, they are rather mild and unassuming in general appearance. 5. The Go-hen-to, or archeresses, who, in the late king's time, were young girls, the purest corps, the pride of the army, and the pink of dancers. Armed with a peculiar bow, a quiver full of light cane-shafts, and a small knife lashed with a lanyard to the wrist, they were distinguished by scanty attire, and by an ivory bracelet on the left arm.

Such is Capt. Burton's description of these African Hippolytes. The total number of Amazons is now 2,500, of which the fighting women are 1,700. Gelele, the present king, has never been able to bring more than 10,000 troops into the field.

Capt. Burton devotes a good deal of space to the correction of popular error as to the extent of the Grand Customs of Dahomey. Com. Wilmot, as our readers know, had already communicated observations to the Admiralty which put a new gloss on this abominable institution. The horrible thing exists: though it has been grossly magnified as to extent and horror. Capt. Burton confirms, and more than confirms, the many grounds of explanation offered for this annual execution. Many of those put to death are criminals, and the rest are prisoners:

"Decorum exacts that the first fruits of war and that all criminals should be sent as recruits to swell the King's retinue. Hence the ordinary annual customs. We can hardly find fault with putting criminals to death, when in the Year of Grace 1864 we hung four murderers upon the same gibbet before 100,000 gaping souls at Liverpool, when we strung up five pirates in front of Newgate, when, during the late age of 'hanging Mondays,' the Latinist exclaimed

Scarce can our fields, such crowds at Tyburn die,

With hemp the gallows and the fleet supply;

and when our last Christian king but one killed a starving mother of seventeen, with an infant at her breast, for lifting a yard of linen from a shop counter. A Dahoman visiting England but a few years ago would have witnessed customs almost quite as curious as those which raise our bile now. With respect to slaying captives, it must be remembered that this severity depends upon the nature of African wars; with these people, *lex talionis* is the highest experience of law, and after defeat quarter is given only to those who are reserved for slavery or for sacrifice. There is, therefore, a shade of excuse for it. The executions are, I believe, performed without cruelty; these negroes have not invented breaking on the wheel or tearing to pieces their victims, as happened to Ravaillac and the half-witted Damiens. Finally, it must be remembered that throughout the year Customs' time is the only period of punishment—that the sacrifice is done openly, enabling all to witness the consequences of crime, and that it seems to wither away all minor offences of violence."

Such an explanation covers only part of the horrid practice. There is no excuse for murdering the captives taken in war. There is no excuse for slaying the wives, eunuchs, officers, bards, singers and drummers of a deceased king. There is no excuse for killing a man every time the living prince desires to send a message to his sire in Deadland. Yet Capt. Burton failed to make any impression on either Gelele or his ministers, as regards the necessity for abolishing this custom.

*Cornelius O'Dowd upon Men and Women and other Things in General.* (Blackwood & Son.)

At present we are not aware of facts that would justify us in bringing a charge of vanity against the not unknown author of these unquestionably amusing essays; but there can

be no injustice in hinting that the author's friends, and those other persons who have laboured to place the book favourably before the world, are to be commended for zeal rather than discretion. Some weeks have elapsed since the papers were gathered from the pages of a monthly magazine, and, according to the current slang of the literary market, were "offered to the public in a collected form"; and from the date of their republication up to the present time the readers of gossip in English and continental journals have been almost daily assured that society is burning with a strong desire to penetrate the mystery of the writer's *nom de plume*, and discover whether he be Mr. This or Sir So-and-So That. A month since the English tourists assembled in Paris were informed by a paper, well known in the hotels of the Continent, that public opinion in the British Islands still remained in doubt whether Cornelius O'Dowd paid rent and taxes under the name of Cornelius O'Dowd, or was but a name assumed for professional purposes by a distinguished literary baronet or some other familiar novelist. It was gravely asserted that for months past the clubs of Pall Mall, the smoking-room of the House of Commons, and all other institutions to which the popular mind attributes an excess of bootless curiosity had incessantly and vainly striven to trace O'Dowd to his particular writing-desk; that at ball and *file* the first question put by a fashionable lady to her friends was sure to be an inquiry for the private history of the brilliant essayist; and that interest in the purely personal affairs of the new censor of "Men and Women" disturbed the even flow of gossip at provincial tea-parties. It is scarcely necessary to say that this intelligence was a surprise to us. We could recall a time when all the world between the Hebrides and the Crimea exclaimed with one voice "Who is Dowb?" but though we had spent a large portion of the preceding twelve months in social intercourse with our fellow-men, we could not remember a single occasion when human voice had asked us "Who is Dowd?" We turned from the puff with a suspicion that our own state with regard to the particular question did not widely differ from the experiences of the rest of our fellow-countrymen, either in society or out of it.

In justice to the author, we must say that his book in no way stands in need of dishonest praise. It is so sure of receiving a liberal amount of unbought eulogy, that those who are responsible for the success of its voyage through the shoals and quicksands of circulating libraries may confidently decline the aid of flatterers. The papers are cheerful, brilliant articles, on a few of those light and not important topics in which the clever idlers of cultivated society find their principal amusement. Of Continental life, as it may be seen by observant tourists through the windows of fashionable hotels, Mr. Cornelius O'Dowd gives some clever pictures, and occasionally he sketches national character with a precision and delicacy that induce us to regard him as one who has lived in foreign countries for higher ends than mere pastime. His paper on "Italian Traits and Characteristics" is admirable; and his essay on "Adventurers," and his sketch of "R. N. F., the Great Chevalier d'Industrie of Our Day," will cause much hearty laughter, and lessen the number and success of that numerous body of English swindlers who prey on the simplicity of foreign innkeepers and the credulity of British tourists. Indeed, every paper in the collection will bear a second reading. Besides perfect command of his pen, Mr. Cornelius O'Dowd displays judgment and tact never found in like degree in an untried writer. Well aware that in these

busy and frivolous days workers have little time and idlers no humour for grave moral treatises, he plies his readers liberally with anecdote and satire, assuming his drollest aspects and making his brightest jests at the moments when he is most anxious to give profitable counsel. For the greater part, his illustrative stories are old tales familiar to all who have dined with the witty conversationalists of the departing generation; but his mode of producing an old *mot* is so thoroughly artistic that we could imagine ourselves laughing over Joe Miller's drowsy witticisms, if Cornelius O'Dowd edited them with his peculiar piquancy. Habitual narrators of time-worn tales, who are guilty of the common error of expanding their "good stories," in the belief that, by overlaying an anecdote with new phrases, they can draw attention from the antiquity or feebleness of its point, would do well to take a lesson in their not lofty art from this new master of colloquial narration, who employs words with equal discernment and parsimony, and takes every opportunity to flatter his readers' sagacity by allowing them to pick up the pearl which he has thrown before them, and to complete the story which he has intentionally left not quite finished. Perhaps the paper in which the art of the story-teller is seen to best advantage is the sketch entitled "A Friend of Gioberti's." This little piece is, in its way, a perfect gem of humour and cunning touch; and though it takes up scarcely twenty minutes of the reader's time, it is a work of prose fiction that would reward the labour of any dramatic writer who should put it properly on the stage. The following passage from "The Decline of Whist,"—the most whimsical and wrong-headed of all the writer's drolleries,—may be taken as a fair sample of his style:—

"The late Cabinet of Lord Derby contained some good players. Two of the Secretaries of State were actually fine players, and one of them adds Whist to accomplishments which would have made their possessor an Admirable Crichton, if genius had not elevated him into a far loftier category than Crichton belongs to. Rechberg plays well, and likes his game; but he is in Whist, as are all Germans, a thorough pedant. I remember an incident of his whist-life sufficiently amusing in its way, though, in relation, the reader loses what to myself is certainly the whole pungency of the story: I mean the character and nature of the person who imparted the anecdote to me, and who is about the most perfect specimen of that self-possession, which we call coolness, the age we live in can boast of. I own that, in a very varied and somewhat extensive experience of men in many countries, I never met with one who so completely fulfilled all the requisites of temper, manner, face, courage, and self-reliance, which make of a human being the most unabashable and unemotional creature that walks the earth. I tell the story as nearly as I can as he related it to me. 'I used to play a good deal with Rechberg,' said he, 'and took pleasure in worrying him, for he was a great purist in his play, and was outraged with anything that could not be sustained by an authority. In fact, each game was followed by a discussion of full half an hour, to the intense mortification of the other players, though very amusing to me, and offering me large opportunity to irritate and plague the Austrian. One evening, after a number of these discussions, in which Rechberg had displayed an even unusual warmth and irritability, I found myself opposed to him in a game, the interest of which had drawn around us a large assembly of spectators—what the French designate as *la galerie*. Towards the conclusion of the game it was my turn to lead, and I played a card which so astounded the Austrian Minister, that he laid down his cards upon the table, and stared fixedly at me.' 'In all my experience of Whist,' said he, deliberately, 'I never saw the equal of that.'—'Of what?' asked I.—'Of the card you have just played,' rejoined he.

"It is not merely that such play violates every principle of the game, but it actually stultifies all your own combinations."—"I think differently, Count," said I. "I maintain that it is good play, and I abide by it."—"Let us decide it by a wager," said he.—"In what way?"—"Thus: We shall leave the question to the *galerie*. You shall allege what you deem to be the reasons for your play, and they shall decide if they accept them as valid."—"I agree. What will you bet?"—"Ten napoleons—twenty, fifty, five hundred if you like!" cried he, warmly.—"I shall say ten. You don't like losing, and I don't want to punish you too heavily."—"There is the jury, sir," said he, haughtily; "make your case."—"The wager is this," said I, "that, to win, I shall satisfy these gentlemen that for the card I played I had a sufficient and good reason."—"Yes."—"My reason was this, then—I looked into your hand!" I pocketed his ten napoleons, but they were the last I won of him. Indeed, it took a month before he got over the shock."

Having been generous to Cornelius O'Dowd, we must now be just to the reader. A hint will suffice to indicate that the essayist is not without his faults. We could point to more than one place where his rifle misses fire when it is maliciously pointed at an adversary. Two or three of the later papers are very inferior to the best chapters of the volume. 'On Climbing Boys,' for instance, signally exposes the writer to the fine thread of the critic's lash. The whole fun of this essay consists in an overstrained comparison of sweeps and statesmen. "It would," says the writer, "be tempting—but I resist the temptation—to show how many points of resemblance unite them—how each works in the dark, in a small, narrow, confined sphere, without views or outlet; how the tendency of each is to scratch his way upwards, and gain the top, caring wonderfully little how black and dirty the process has made him. A volume might be written on the subtle artifices adopted to keep them 'little'—the brow-beatings, the insults, the crushing cruelties, the spare diet intermixed with occasional stimulants, the irregular hours, and the heat and confinement of the sphere they work in. Still, nature is stronger than all these crafty contrivances. The little sweep will grow into the big sweep, and the small Under-sec. will scratch his way up to the Cabinet." Mr. Cornelius O'Dowd is a clever fellow, and boasts that he has "been everywhere—eaten of everything—seen everything"; but, notwithstanding his modest assurance, we are inclined to suspect that he has never seen a Smart's chimney-sweeping machine and has never carefully perused the Acts passed in Her present Majesty's reign for the better regulation of the chimney-sweeping trade. Anyhow it will comfort him, in his lively sorrow for our poor little chimney-sweeps, to be told, on authority, that 5 Vict. 1840, forbids master sweeps to take apprentices who are under sixteen years of age, and that since July 1, 1842, the law has permitted no person engaged in the sooty business to ascend a chimney until he has attained the age of twenty-one years.

*Louis the Sixteenth, Marie Antoinette, and Madame Elizabeth. Unpublished Letters and Documents*—[*Louis Seize, &c.*] Edited by F. Feuillet de Conches. Vol. I. (Paris, Plon; London, Jeffs.)

THIS first fourth of a collection made during twenty years of research, the authenticity of which there is no reason to dispute, will create some sensation here; though less, it may be, than in Paris, where the volume has been devoured. No pains seems to have been spared by M. de Conches. A preface concerning the royal family of France allows us to see predilections not unwarranted by the correspondence; but the advocacy implied can offend no one, save the

most bigoted and unscrupulous of partisans. To such, any amount of testimony is merely so much disturbance.

For general readers, as distinct from historical students, for those who do not wait to weigh the respective testimonies of Madame de Staél, MM. de Lamartine and Louis Blanc, respecting the precise amount of merit or demerit due to all who took part in that tremendous transaction, the French Revolution,—the central figure of interest will be Marie Antoinette. She shares what may be described as the world of imaginative sympathy and curiosity with Mary Stuart. No matter whether she be proved in court to be black as Messalina, or stainless as Una with "her milk-white lamb," a fascination will cling about the daughter of Maria Theresa, which no accuser can dispel by his evidence, no advocate wear out by his tediousness, no fanatic destroy by his enthusiasm. Ill-starred, all will agree in admitting her to have been;—endowed with beauty, with grace, with the pride that subdues, with the persuasions that seduce;—trained in all that was held most fitting to enable a woman to take her appointed place on a height no less dazzling than the throne of France,—it seemed sung over her cradle that every counsel she received from her birth should lead her astray,—that every change in her life, from her infancy in her politic mother's court, to her youth, as the chosen queen of a great country, and thence onward to the block, on which her grey head, weary of weeping, laid itself down,—should be attended by some sinister influence, to deny her love its wholesome outlet, to spoil her purposes when they were the most direct, to deliver her into the hands of ruthless enemies when a chance seemed open for her escape.

With Marie Antoinette the volume opens; her first letter, bearing the date of May, 1770, was written from Strasbourg, to acquaint Maria Theresa with the splendour and cordiality of her welcome into the Dauphin's country. Everything seemed then bright and charming; the path to be strewn with roses. The French people were delightful; only too prodigal of their flattery. Madame de Noailles, not as yet *Madame Étiquette* (the nickname by which she was subsequently decorated at Court), was invaluable as a counsellor. Ten days later she writes of her reception at Compiegne in the same happy strain. Even those troublesome single women, Loque, Chiffe, and Graille, as Louis Quinze called his daughters, were acceptable to her. *Fêtes* and presents were showered on her; particular mention being made of "the surprising prodigality" of one given at Chilly, by a very singular woman, "who has the air of a Calypso," the Duchesse de Mazarin. For awhile we meet with no topics more important than these, or the doll, dressed in the richest Lyons stuffs, despatched to her sister, the Archduchess Maria Christina, who was about to be married, and wished for the newest French fashions. It is not till eighteen months have passed that any sign is given of the fading of the *Morganiana*-show. Then, however, in a letter to her mother (published already by M. Hunolstein), we find the Dauphiness writing unreservedly of her husband and his family. She believes that she has succeeded in possessing herself of the Dauphin's affections. Though he is habitually taciturn, he talks to her freely. She is less sure of his troublesome aunts, who are "sometimes demonstrative, sometimes cold and biting." She is observant of her sisters-in-law, and finds Elizabeth (Madame Elisabeth) promising, though original, sometimes haughty—one whom it may be difficult to tame and to attach. Then comes a noticeable passage, which, if even it be known, is worth giving here:—

There remains the Dubarry, of whom I have not yet spoken to you. I have behaved to *la faiblesse* with all the reserve which you recommended to me. I was made to sup in her company, and she took a tone with me, half-respectful and embarrassed, half-patronizing. I shall not lose sight of your counsels, of which I have not spoken even to the Dauphin, who cannot endure her, though he does not show it, out of respect to the king. She has an assiduous Court; the ambassadors go there, and every stranger of distinction requests to be presented to her. Without seeming to listen, I have heard curious things said of this Court. They crowd to it as if she was a Princess. She makes a circle, they press forward, and she says a little word to every one. She reigns. It rains at this moment while I am writing; probably she has given permission. On the whole, she is not a mischievous woman, but rather a good-hearted person, and they say she is very good to the poor. The Court here, such as it is, is dull rather than gay; the etiquette is sometimes very tiresome.

The next letters in the collection are devoted to the peremptory deposition of this Sultana, containing the orders of Louis the Sixteenth, on succeeding to the Crown, addressed to the Duc de La Vrillière, definitively to banish the favourite, as one who knew too many secrets. She was to take up her abode in a provincial convent, where she was to see no one. Jean Dubarry, who had made off with poor *Cotillon's* diamonds, was to be arrested and shut up, as a rascal "who traded on his sister-in-law, and robbed her at the same time."

To return to the Queen. We presently find the King, among other minute personal directions which fill his correspondence during the early days of his reign (many organizing some reform or measure of benevolence), granting formal permission for the market-women to come and pay their respects to his wife; later still, commanding that a present should be made to her music-master, Gluck, in acknowledgment of the delight they had received from his *'Iphigénie en Aulide'* (in 1775). Not long after this we find the first trace of the Queen taking interest in other affairs than home gaieties or family matters, in a letter to her friend, the Princesse de Lamballe, who was then in Brittany, approving of the measures by which the Duc de Penthièvre was insuring and increasing the King's popularity in a district become somewhat disaffected under the administration of the Duc d'Aiguillon. Here is an episode on matters of more intimate interest. "The Emperor," who visited Paris in the year 1777, was Joseph the Second of Austria—Mozart's "good Emperor."

The Emperor (writes the Queen to her sister) is obstinate, as I have already told you, dear Marie, in not choosing to take up his residence at the Palace. He lodges in a furnished hotel, but sups with us. Last month I took him to a representation of *'Iphigénie en Aulide'* at the Opera; he buried himself in the back of the box, but at the end of one of the pieces I took him by the arm, and made him show himself. Then, he was received by the public with acclamations, and came away in a state of enthusiasm about his reception, and the success of our good Gluck. He is always the same. He makes just observations on everything he sees, and gives advice such as no one else could give. Sometimes, one must confess, the manner is too abrupt, which makes his great ideas lose their effect. My dear mother will not take it amiss that I use this language; she knows, better than any one else, my brother and myself; she knows all the admiration I have for him, and all the value I attach to his having a complete success at Court, as he deserves, and how proud I am of the respect which he inspires here. The King regards him as a friend, and as he is very timid and speaks little, he listens willingly without saying a word. When our brother gives him his critical blows, he contents himself with smiling

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and being silent. The other day, however, he could not keep silence on certain principles of government developed by the Emperor against the clergy. The King answered his arguments one by one, with a precision, firmness, and coolness which astonished us all, and which rendered anything like the continuation of the subject impossible. "Every country has its habits and necessities," said he, at the end. "It is possible, which I doubt, my dear brother-in-law, that your system might be applicable in other states; but we are in France, and it is a country where strange importations, in matters of government, have not the air of succeeding much." The vivacity of his language made me afraid for a moment, but this teasing word-warfare has in no respect diminished the friendship which my husband bears for my brother, and I am sure that the discussion has only raised the King in the esteem of the Emperor. For my part, I confess, I was particularly satisfied with his triumph. My brother reproached my husband for not visiting the provinces of his kingdom, to make himself acquainted with their wants.

The King replied, that he had demanded nothing better than to travel in France with his tutor, and afterwards since our marriage, but that the King (Louis Quinze) had not thought it proper. He had even, for an instant, had the idea of going to Vienna to see you all, and to take the opportunity of enjoying one of the great Bohemian hunting parties, but the King had said that he would not be separated from him or from me. He has thoughts of visiting the provinces once, after he has mastered their affairs, conceiving that one would profit by it more the more one knew. He wishes, meanwhile, that his brothers, happier than himself, should make such a journey, beginning with the ports and towns belonging to their appanages, and should report to him what they had seen. Ah! if I could one day go to embrace you, and to embrace our good mother, what happiness, after so many years passed far from you! Stop,—I love you to distraction, you and all the circle of the Green saloon, yet at the same time I feel myself a Frenchwoman to my very fingers' ends. One must have the virtues of one's position. The nation is excellent. The criticisms and oppositions of my brother have only confirmed me more than ever in these ideas, for I see things close enough to judge that here they only want to do well.

There is surely, in the above letters, another Marie Antoinette from the careless and adulterous wife and the profligate sovereign who completed the ruin helped on by the Pompadours and Dubarrys, whom the pamphleteers and song-writers lashed with the rage of fiends, and the coarse obscenity of kennel-rhymesters, for the entertainment and abhorrence of the long-oppressed people of France. If her anxiety to make the most of the sense, judgment, and right feeling of a somewhat unrepresentable husband, is to be set down as hypocrisy, she must have been even a more consummate actress than the worst of her enemies represented. That she set store by her brother's advice and remonstrances, however, is evident. It is only fair, after what has been just said, to note that Rumour must, even at the period of his visit, have been busy with her amusements and associates, both a little freer than the code of Madame Etiquette warranted, since she is to be found defending herself, as under, to the Emperor, in November, 1777:—

Your letter afflicts me greatly, my dear brother. You turn against me the consequences of my own sincerity and confidence in you. I have been truly astonished at the tales made in Paris, concerning the journey to Fontainebleau; as the most of them had no foundation; they disappeared shortly after the return of those who had been eye-witnesses. It is very vexatious for me not to have the same resource in my own country, and above all as regards you. For instance, one would be very much surprised here, to hear M. le Duc de Chartres named as an unfair (*mauvais*) gambler; he has not played a single time during the journey,

in my presence. As to the Comte d'Artois, I know the stories they have invented of him. Nothing of the kind; they were so absurd that they have fallen of themselves, and my brother was the first to laugh at them. The cheating of the women—I have neither seen nor heard of anything of the kind. The bad company—there is always a little at Court, when one plays at a round table, because it is the custom in France to let everybody in. During the eight years I have been here, I have always seen it, especially at Fontainebleau, where there are more people than at any other place.

Acquainting the Emperor with her hopes of becoming a mother,—

The King (she concludes) writes to you, and I send his letter. As to me, I put up no prayers so earnest as those for you, my dear brother. I desire, above everything, that you will restore my esteem, which has appeared to me a little changed. As to our friendship, I have given me so many proofs of it, and I have so much for you, that there would be no more happiness for me were it to diminish.

It will be seen that, within eight short years, the cloud "no larger than a man's hand," distinct harbinger of the hurricane, had already risen out of the waters for the Queen of France. There is hardly one subsequent letter that does not indicate anxiety, the necessity of watchfulness,—insecurity, in brief. Here are a grave scene and a singular character touched in a few words. The date is January, 1782:—

My dear good sister (writes the Queen) I thank you with all my heart for your interest on the occasion of my Dauphin (*sic*). I went yesterday to Paris on this occurrence with the King, and we were received there wonderfully. My health is very good, but that is not the case with all the royal family. The Comtesse d'Artois has been very ill with a fever of a bad character. She requested that they would administer (the sacraments). By the physician's advice and the King's order I was charged to dissuade her from this. But as the disease went on it became necessary to give way to her demand. She is better to-day, still anything but convalescent. I have often spoken to you of Aunt Sophie, who by nature is melancholy and always astonished. She has had a faintness which has compelled her to keep her bed, and I have performed the office of a Sister of Charity for her. She, who had never looked me in the face, suddenly turned towards me with her eyes fixed, and murmuring some words which I could not at once comprehend, she was so utterly broken down. I have since understood that she was praising herself for having the true faith, and for passing her nights without sleep in praying for the King, for me, and for the royal family. She spoke to me a long time in this key in kind language (*bons termes*), and with those fatal expressions of a dying person which go to the heart. I left her, touched to the utmost, as if I was quitting one in the last agony,—and yet her indisposition seems to be of no great importance. The King tells me that she has often had synapses of this nature, and that she will pass from this world to the next in one of these attacks of weakness. It seems to me pretty certain that one has always some inner warning of one's death, and I am not far from believing that Aunt Sophie has an intimate presentiment of her decease.

Aunt Sophie died a few weeks later.

We are now not far from the affair of the diamond necklace, which, no matter how or by whom narrated,—whether by M. Dumas in his fluent novel, or historically by Mr. Carlyle in his racy Anglo-German language, or in the libellous Memoirs of the Lamottes, wife and husband (the latter only published the other day),—is one of those stories of mystery and wonder of which neither matter-of-fact nor imaginative persons will ever tire. That the Queen in her first indignation at one result of the trial—the acquittal of Cardinal de Rohan—felt that she was receiving the first of a long series of heavy blows, is to be seen in the few agonized words scrawled to the Duchesse

de Polignac at the moment of the tidings reaching her:—

Come and weep with me,—come and comfort your friend, my dear Polignac. The judgment which has been pronounced is a frightful insult. I am steeped in the tears of distress and despair. One can flatter one's self with no hope when perversity sets itself to discover every means to outrage my very soul! What ingratitude! But I will triumph over the miscreants, by doing triple the good I have always tried to do. It will be more easy for them to afflict me than to drag me into revenging myself on them. Come, my dear heart!

A letter or two more on the subject, and the note of M. Feuillet de Conches, appended to them, may be commended to any one desirous of refreshing his memory concerning the people busy in the dark labyrinth of intrigue. Our editor possesses, he informs us, a large collection of autograph letters and papers on the subject—from the miserable woman herself who figured in the centre of the plot, and (whether altogether justly or unjustly condemned and branded, who shall say?) who perished in a wretchedness worse than perpetual imprisonment would have been,—from the Count de Vergennes substantiating the transportation of the courtesan D'Oliva; from De Launay, the governor of the Bastille, giving account of his prisoners—describing how the Cardinal kept "a *salon*, almost as if at the Hôtel de Soubise," and the agonies of Cagliostro, in the idea of the death of his wife. There is also a memoir, addressed from the Conciergerie to the King by Lamotte, little less remarkable for its insolent innocence, with mendacity in every tone of it, than his dismal autobiography, which only saw the light six years ago, under the auspices of M. Lacour. This autobiography, by the way, was written in 1825 at the instance of the *Prefet* of the police, to whom the abominable old miscreant, after having been brought by misery, he tells us, twice to contemplate suicide, repaired to beg a crust of bread. For many years it was kept under lock and key, out of consideration to the feelings of surviving descendants of Marie Antoinette. As the Mémoires stand, they appear with large suppressions, but as making a book of picaroon adventure and falsehood, they are curious.

We will stop on the threshold of darker troubles than even the acquittal of De Rohan; lingering, however, for a moment in what may be called a last gleam of sunshine, to quote a letter dated from Trianon, 1786, and addressed by Marie Antoinette to her sister, Maria Christina, who had just paid her a month's visit, travelling as the Comtesse de Bély.—

I have scarcely taken leave of you, my dear Countess de Bély, when (my eyes still wet with our adieux) I wish to embrace you anew. Write to me immediately how you have accomplished your journey, and how you arrived at Brussels. The good Duke was not at ease when he left us, and I wished it should be so, for his having set out in such a state, in spite of our entreaties. I am going to sit on the bench where you and I went to talk, my good, dear Christine, and to renew, as much as I can, that happiness—by dreaming of it. My daughter will herself water the little *parterre* of your favourite flowers. For her this will be to breathe you, and I will give your name to the first chrysanthemum which succeeds. \*\* The King has not *dried up* in regard to you since you left us; and your niece, who is not much of a talker, has *dried up* even less.

Here we must close what may be called *vivid voce* illustrations of the character of a deified and maligned woman during a considerable period of her history;—not, we admit, having confined ourselves to one figure, and what may be called one group of letters, without the purpose of drawing out "redeeming traits," to call these records of hopes and fears and family affections by no better name. Only lately we

were invited to study the character of another German princess who married a Child of France; who, too, had to wrestle with fearful and unexpected calamity; and whom her sorrowing friends and kindred have embalmed, not unjustifiably, in sanctity. Yet there is little in the correspondence of her whom every tongue has agreed to praise, that seems to us truer in feeling and honest desire to be right than the above hasty letters and notes from the pen of the woman made infamous as *Madame Veto*, and whom many persons (if prejudiced, still just) still hold to have prepared and merited her doom by her falsity, pride, frivolity and vice.

This first volume contains materials for a second study of the Queen after the sky had darkened and the storm burst, and when every expedient, no matter how hopeless and desperate, must needs be tried in vain. The King, too, stands out in it as a well-intentioned man, rather limited than weak; — distressed between purposes for the public good, such private tastes as monarchs who reign in critical times have no right to indulge, and the influence of old traditions, which made him hesitate at the appearance, rather than the reality, of reform and concession — a ruler totally unequal to the time and place of his reign. The letters, too, of Madame Elisabeth show a third character, — totally distinct from that of her brother or her Austrian sister-in-law, — a character to be reserved for a future study; since we can hardly fail to return to a work so full of matter, of which only a part is yet before us, and to a corner of which portion we have, of express purpose, confined our notes.

*Organic Philosophy; or, Man's True Place in Nature.* Vol. I. *Epicosmology.* By Hugh Doherty, M.D. (Trübner & Co.)

To give a full account of this work, supposing it finished, would require much comparison with other systems. At present, we shall only remark, that Dr. Doherty differs from his immediate predecessors in two points, at least. He has "dwelt on numbers and divarications, more than order, weight and measure." Also, in estimating man's true place in nature, he considers, "his place, and faith, and life, as a religious subcreative being, in co-operation with his Maker; not as a mere animal, unconscious of a higher use than that of satisfying physical propensities; but living and labouring consciously for purposes of industrial uses, artistic beauty, scientific truth, social and religious goodness in collective organization and co-operation." He objects to Comte as ignoring God; to Darwin as ignoring evidences of design. He conceives it possible that Darwin and others may contemplate an evolution of several things to which they are not yet come; but, in the meanwhile, it is perfectly true that they show very small symptoms of such intention. We ourselves have often wondered when man is to be presented complete. We have the genus *homo*, plantigrade and so forth, with much about the hippocampus. But when are we to see some account — not to invent Latin compounds — of the pen-to-paper-putting, abstract-idea-separating, self-into-fifty-system-spinning, soup-manure-or-theory-with-equal-ease-out-of-bone-concocting animal, who may be distinguished from all other animals by any one of these epithets? So long as the question is about the place of man among animals, we read with all interest the researches of the zoologist. But when the question is about man's place in universal nature, what he is, and how he came to be what he is, we agree with Dr. Doherty that recent speculations need higher aim: they leave man's place in nature with a vacuum which that nature abhors.

But though feeling the want which our author points out, we can by no means be sure that we can engage him to supply it. His work may be divided into his descriptions of others, his criticisms on others, and his account of his own thoughts. As yet we have but one volume: in what follows we are to be shown "that one organic law rules all worlds, and that the human body is a type of all creation." Since he has certainly read widely and reflected much, we are prepared to suppose that he will be a suggestive writer, be he right or wrong. Many a valuable component of acknowledged science has been first found in books the main teaching of which is now wholly obsolete. But we confess that, so far as we have yet seen, Dr. Doherty's dealings with numbers do not satisfy us: we rather suspect that he has pursued analogy a little beyond his own knowledge and the common sense of man. He talks of vulgar fractions and of "harmonic" fractions, denoting "such numerical divisions of vibrations in a musical scale as are musical": we have not the least idea what he means. The mathematicians say that fractions are in harmonic progression when their reciprocals are in arithmetical progression; but the remote analogy with musical harmonics and their theory will not serve us here. In carving a fowl, we are told, you make vulgar fractions; you cut off a wing with mixed skin, muscle, nerves, &c. But when you dissect, you make harmonic fractions; you separate skin from muscle, both from nerve, &c. And so we get "seven systems and five senses in the internal organism, neither more nor less; just as we find seven diatonic notes and five intermediate notes in the complete musical scale." This is, we believe, the greatest vagary in the book; but really it is not small. The ultimate point of analogy does not exist. The oldest musical scale has but five notes and no semitones. And every musician knows that the seven notes and five semitones are nothing but a compromise: that each semitone is but one falsehood preferred, for convenience, to two truths. How many intermediate notes do General Thompson and the other perfectionists want? Considerably above a score, we believe. Our gallant old reformer considers the twelve tones as an acoustical corn-law, a tax levied on the ears for the advantage of the fingers: he looks upon equal temperament as a fixed duty, and upon unequal temperament as a sliding scale. And he is right in principle, though he may differ from most as to the amount of the tax. We take leave of Dr. Doherty with a strong recommendation to curb his numerical propensity, which is his besetting sin. He may produce a work which will be treated with respect by candid opponents: but he should be wiser than to furnish such occasion as we have quoted to those who are ready to take any advantage.

*The History and Cartulary of the Monastery of St. Peter, Gloucester — [Historia et Cartularium Monasterii Sancti Petri, Gloucesterie].* Vol. I. Edited by W. H. Hart. (Longman & Co.)

For nearly five hundred years, if tradition be true, the Christian doctrine had flourished in what is now called Gloucestershire, when in A.D. 68, Osric, then viceroy of the Huicci and afterwards King of Northumbria, founded the monastery of St. Peter in Gloucester, and named his sister, Kyneburgh, first of a line of royal or noble abbesses, which expired amid the anarchy of 767, when Eva, the daughter-in-law of Penda, passed from the scene and had no successors.

Half a century later, Beornulph, King of the Mercians, restored the desolate house, but his

kingship would have nothing to do with the ladies. Of nuns and abbesses he would have none; but in the new home he established secular clergy, mostly married men, differing little in food and dress from laymen, but bound by certain rules, observation of which authorized them to enjoy the possessions of the old sisters.

It seems doubtful whether these married seculars kept the rules which ought to have bound them. Certain it is that, in 1022, they were ejected, and regular Benedictines were established in their stead. The Gloucester folk, however, seem not to have welcomed the solemn strangers. Seven of them were killed in a brawl; but the authorities did not hang the leader of the assassins, a wealthy noble named Le Rue; they merely charged his estate with the maintenance of seven monks in the monastery; which step caused him to have a longer regret for what he had done than if he had been hoisted, at once, to the gallows.

From Edric, the first abbot (1022), to the death of Abbot Froucester (1412), we have nearly four hundred years of monastic history. The first Benedictines seem to have been quite as ignorant as the people among whom they dwelt; but as time went on, things improved; great changes were effected, the monastery was more than once rebuilt, each time with increase of splendour; it was enriched by gifts, made still more wealthy by bequests, and had grand old fellows for abbots, men who were scholars and gentlemen, little princes in their own domain, gorgeous in costume when occasion offered, and not more particular as to table and cellar than was requisite at the hands of well-endowed abbots, who royally entertained kings, and gave cheerful entertainments in a private sort of way to the delighted brethren, — the abbot in the chair! The Norman abbots, particularly, were wonderful adepts in combining great dignity with great powers for business and enjoyment. Nothing more charming can well be imagined than the quiet, prosperous, not useless nor godless, but thoroughly decent and agreeable lives of brethren like these Benedictines. The fraternity was a "club" just suited to the times, and the members resided, during life, in the best regulated of hotels, with nothing to pay, save a little obedience to superiors.

Of the writer of the history or chronicle conjecture only can be made. The book seems to be partly contemporary chronicle, partly history, — the latter comprising the additions made by subsequent readers of the chronicle, of which they became thereby, in some measure, the editors. The history is pleasanter reading than the cartulary, or collection of deeds connected with the monastery and its possessions. The former, undoubtedly, chronicles no little amount of "small beer," but it is all illustrative matter, — home and local incidents, the coming, tarrying and wending of illustrious visitors, the strokes of lucky or adverse fortune, the characters of the abbots, and the like. Perhaps the most remarkable incident is that which refers to the death of the detested king, William Rufus. This history tends to show that the death was not accidental. The Church, which he oppressed, was at least aware that there was something in the wind adverse to the Red King, and there was a whisper through the monasteries that mishap was likely to befall him. A Gloucester monk declared that in a dream he had seen the Virgin pleading to her Son against the foul tyrant of the Church, and that promise of vengeance was vouchsafed by the Lord. As the hour for the promised vengeance drew near, and Rufus scoffed at those who warned him of it, the priests grew bolder.

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On the very day previous to the slaying of the King, the scripture expositor, Fulchered, informed the crowds to whom he preached at Gloucester, that England had been trampled by the profane, and the Lord would no longer delay vengeance. "The bow of divine wrath," he said, "is bent against the reprobate, and the swift arrow is taken from the quiver to inflict wounds." And, the next day, despite fresh warning, Rufus rode forth to shoot the deer, and in the evening was found stretched dead, as was spoken by the prophet.

This use of the pulpit was not confined to these earlier times. When Edward of Caernarvon was about to be murdered, Orleton, Bishop of Hereford, preached before the University of Oxford, in presence of Queen Isabella and her son, afterwards Edward the Third. Historians are not agreed as to the text, but, says Lingard, "many thought that they discovered in the sermon dark and prophetic allusions to the fate which afterwards befell the unfortunate Edward." The thought was not unreasonable, for in one passage of the Bishop's sermon, the congregation were told that "when the head of a kingdom becometh sick and diseased, it must of necessity be taken off without useless attempts to administer any other remedy." This was plain speaking, and pulpit eloquence of the like quality was not wanted when the downfall of Richard of Bordeaux was at hand.

One of the most honoured guests at the Monastery of St. Peter's was the above Edward of Caernarvon. The monks feasted him right royally in the "aula Abbatis," which—and this is a singular illustration of the times—was hung round with the portraits of Edward's sovereign predecessors, "depictis figuris regum prædecessorum suorum." The Abbot asked whether he might add Edward to that painted company, but the pious king expressed a hope that he might occupy a more holy place in the edifice than the Abbot's banqueting hall. And so it happened, for when neither the monks of St. Augustine of Bristol, nor of St. Mary of Kingswood, nor of St. Aldhelm of Malmesbury dared receive the body of the murdered king, "out of fear of Roger Mortimer, Queen Isabella, and some of their accomplices," the Abbot of St. Peter's, John Thoky, brought the body from Berkeley Castle in his own carriage, with the arms of the monastery painted thereon—"suo curru honorifice ornato cum armis ejusdem ecclesie depictis." At a splendid funeral the mutilated remains of Edward of Caernarvon were consigned to the dust. His tomb was a shrine to which such multitudes of loyal people from all parts of England flocked to witness miracles and deposit offerings, that Gloucester could not shelter half of them. Such wealth accrued to the monastery, that church-reparation was lavishly effected thereby; and the chief government does not appear to have interfered to prevent the concourse of people whose loyalty to the memory of Edward the Second implied something contrary to the allegiance claimed by his son and successor.

Most of the abbots seem to have been fine old gentlemen, but the "first gentleman" of them all, not excepting John de Gammages, noble by birth and elegant in manners, whom Edward the First especially admired, was John of Wygmore. He was handsome, well-spoken, affable, liberal, greatly beloved, and hospitable, for "he very often invited several of the brethren at a time to his own room, for recreation, and treated them with variety of fare in eating and drinking." *Retributus Deus animæ ejus*, May God pay it back to his soul, adds the Chronicler, and clinches the pious wish with an emphatic *Amen*.

For such feastings and little drinking-bouts,

however, the Abbots had ample funds. Even when they entertained kings, and the crowds in their *suite*, there is no complaint at the outlay; nothing more than a remark that the grass was entirely destroyed on the lawn by those who carried on various games there. But what was some trodden-down grass to an ecclesiastical lord of thousands of acres of land? To the richness of that at Slimbridge an illustration was applied, which the people probably owed to the classical recollections of the abbots, and which has been appropriated and exaggerated by compilers of Yankee jest-books. "Lay a wand at night on Slimbridge land, where the grass has been bit to the roots, and it will be covered with fresh-grown pasture before morning." When this was told to James the First, he remarked, for the honour of his native soil, that he knew a place in Scotland, wherein, if a horse were turned, over night, it would be impossible to see him in the morning! The royal joker did not explain that the disappearance was caused not by excessive growth of grass, but by activity of horse-stealers.

Time and circumstance have rendered the old monastery as invisible as this legendary horse; but a relic of its glory, not above eight hundred years old, may be seen in the South Kensington Museum. It consists of a gilt candlestick, elaborately ornamented, exquisitely wrought, and admirably preserved. Above seven hundred years ago, it was presented to the Cathedral of Mans, subsequently became the property of a Mans Marquis, was afterwards bought by Prince Soltykoff, and was recently purchased, for £600, for the South Kensington Museum. There are few English relics there of greater interest.

#### NEW NOVELS.

*Abbots Thorpe; or, the Two Wills.* By Mrs. C. H. Burton. 2 vols. (Hall & Co.)—The promise of 'Bertha Darley' has been well carried out. Mrs. Burton's present work is ingenious in structure, finished in detail, and satisfactory, if not extraordinary, in its sketches of life and character. The most important personage in the story is a designing scoundrel, named Trapps, whose feats of rascality commence at a period far anterior to the opening of the main drama. In a grand Fechterian pageant these early adventures would afford materials for an introductory act, or "Prologue" as it is now the fashion to call it; but in the book they are naturally made to assume the form of a retrospective narrative. We can only give an outline of the complicated history, but we shall briefly relate the principal events in their chronological order. Trapps first appears in the older or retrospective plot, as valet to Arthur Glenmore, a young man rejoicing in a decayed fortune, extravagant habits, and a strong-minded and unscrupulous wife. This vigorous lady determines upon an infamous mode of recruiting her exhausted finances. She calls on an unhappy young woman of the name of Moore, who has received valuable presents from Mr. Glenmore, and threatens to prosecute her as a thief unless she consents to reside as lady's maid in the house of a rich young couple of the name of Elliott. Mrs. Moore is terrified by her menaces, and agrees to do her bidding. It happens that a dissipated young baronet becomes intimate with the family, and Mrs. Glenmore and her husband use all their influence to make Mr. Elliott suspicious of his wife. After the ground has been thus prepared, Trapps is put in communication with the Baronet's valet, and obtains from him a letter in his master's handwriting, addressed to the innocent and unconscious Mrs. Elliott. This letter is conveyed to the faithful lady's maid, who pretends to find it in the boudoir of her mistress, and carries it in a fit of virtuous indignation to Mr. Elliott. The result is, that the young husband is killed in a duel, the wife goes distracted with grief, and their infant daughter becomes the ward of Mr. and Mrs. Glenmore. In course of

time Gertrude Elliott grows up and is married to Harcourt Glenmore, a weak, affected and perfectly unscrupulous young man. The Glenmores have now got boundless wealth at their command, for Gertrude is enormously rich, and this fact has been kept "dark," so that the managing mother has it all her own way. At this time the childless owner of Abbots Thorpe dies, and his vast landed property comes to Harcourt under his will, while his grandson, Hugh Ethelstone, who was expected to be his heir, is cut off with a shilling. The Glenmores immediately take possession, and to all outward appearance they are eminently prosperous; but they are soon to experience the fact that those who use the services of a villain are tying a rope round their own necks. About a year after their accession to the Abbots Thorpe estate Trapps informs them that there is a later will in his possession, by which all the property is left to Hugh Ethelstone. What can they do? They are bound hand and foot. Even if they were willing to give up the estate they dare not do so, for the tyrant Trapps threatens to reveal the whole of the old Elliott business. Thus Trapps makes his own terms, and, while nominally a servant at Abbots Thorpe, he rules the house despotically, and plunders his master without mercy. It is needless to say that these things are kept secret from Gertrude, who is neglected by her husband, and treated as a child by her mother-in-law. She begins, however, to suspect that something is wrong, and determines to find out what, if she can. Suspicion is accidentally directed to Trapps in consequence of a ludicrous incident. At a fancy-dress ball a young man, who is intimate with the family, disguises himself in an old-fashioned suit of clothes that belonged to the deceased squire, and covers his face with a plaster cast taken after the old man's death. On seeing this unexpected apparition the ladies shriek, and general consternation prevails; but Trapps's horror and abasement are beyond all reason, and he screams out, "Oh, master, master; forgive me! I did it! but it is safe, safe, and not destroyed!" While these things are going on at Abbots Thorpe, Hugh, the disinherited, is making his way in London, under an assumed name, and fortune favours him by placing him for some months as a clerk in the office of Mr. Glenmore's solicitor. Here he finds out many strange and suspicious circumstances, of which the most important are those which point to the rising wealth of Trapps. Becoming ultimately the partner of his uncle, a princely merchant, he resolves to delay no longer, and at once instructs a solicitor to make inquiries. It is easy to imagine the result of these converging lines of attack, and it is not necessary that we should enumerate all the steps which conduct our hero to success. The wretched Trapps is unmasked at last; and, finding the detectives hot on the scent, he takes refuge in a vast cavern, which leads after many windings to a cove on the sea-shore. Here he is found by his pursuers; but the time is past for human retribution. Caught by the tide, the wretched man has taken refuge on a ledge of rock, and there he has died of cold and exhaustion. The drippings from the overhanging cliffs are gradually encrusting him, and the man whose heart was never softened is now being turned to stone. The above is a mere sketch of the main plot; and there are many striking incidents which we have not even mentioned. Reginald Raycliffe and his sister Meta are important characters; the former a proud and dreamy High-church clergyman, the latter a girl of energy and spirit, who determines to restore the fortunes of her family. Reginald is ever wondering why, in spite of constant industry and perseverance, he can make nothing succeed; and the sketch of Mr. Ellerton is given by way of contrast, to show how two men may travel the same way, yet one may arrive at his destination much more easily than the other. The author wisely avoids religious controversy, though she gives us carefully-drawn examples of two classes of Anglican clergymen. We should imagine that she holds High-church views, but yearns for the practical, and abhors every sort of affectation. We are almost ashamed of enumerating slips of grammar and language; but it is a pity that a somewhat superior novel should be disgraced by such expressions as:

"like the Indians paint their faces"; "mis-begot ten riches"; "retain his incognita"; and self-renouncing." What is the meaning of the following words?—"She had faith in a school conventional block of semi-great people." Who is Anne Duchess of Marlborough? Old Nancy's eccentric remarks during her visit to London are indicative of a vein of humour which Mrs. Burton will do well to cultivate.

## OUR LIBRARY TABLE.

*A Popular Explanation of the System of Land Registration under Lord Westbury's Act.* By Robert John Abraham. Second Edition. (Routledge & Co.)—We recently pointed out that the smallness of the amount of business hitherto transacted by the Land Registry Office can be accounted for only by the fact that the public are not aware of the benefits which may be attained under the new system, and of the slight expense and trouble at which these advantages may be acquired. Lawyers will not spread the information. Some of them conscientiously believe that the possession of piles of dirty parchment, and the payment of a handsome annuity in the shape of costs to the family solicitor, are essential to the secure enjoyment of real estates. Others look upon the new system as a base attempt to destroy the goose that lays the golden eggs on which they fatten. The voice of the profession declares that the Act is a failure; that few titles can pass the official ordeal; with that do, the expense would be enormous. The pamphlet before us is well calculated to dispel these notions, which have been industriously circulated, and generally believed. The author is well acquainted with the working of the Act, as he holds an appointment in the office; and his statement receives a kind of official sanction from the fact that it is allowed to be sold at the Land Registry in Lincoln's Inn Fields. It shows that the work of registration is a very simple matter, and that the expense is very small compared with what is usually incurred in dealing with land. The items of the probable expense of registering a title to 100 acres of land of the value of 5,000/- are stated, and amount, in the whole, to 31/- 10s. This account assumes that the applicants manage the business themselves, which the author tells us they "can do with little trouble, for the process is simple and inexpensive, and that, instead of having difficulties thrown in their way, they will be taken in hand the moment they make application to the Registry, and regularly put through the different steps of the proceeding." To be "taken in hand" in a public office, and not seized by the throat as a malefactor, as is the practice in some of these offices, sounds very pleasant. We think, nevertheless, that there are not many titles that could be registered without professional aid, and that applicants must, therefore, make up their mind to a somewhat larger expense than is here mentioned. We only trust that the benevolent disposition towards the public which is said to influence the officials of the Land Registry now, when they have little to do, may continue when they shall be overwhelmed with business, as, in a few years, they assuredly will be.

*The Laboratory Guide for Students of Agricultural Chemistry.* Arranged by Arthur Herbert Church, M.A. (Van Voorst).—This little book is an attempt, and, we think, a successful one, to simplify the practice of qualitative and quantitative analysis as applied especially to agricultural chemistry. In the qualitative division, all the rare elements and such as are not necessarily constituents of any agricultural material or produce are omitted; and in the quantitative section, the examples have been selected from the most important substances likely to engage the attention of the agricultural analyst. We recommend this little volume to all who desire to study, for practical purposes, the methods of determining the agricultural value of any of those agents which are of interest to the practical farmer.

*A Collection of Right Merry Garlands for North-Country Anglers.* Edited by Joseph Crawhall, and continued to the present year. (Newcastle-on-Tyne, Rutland.)—So strongly, it may be said so exclusively, does this handsomely-printed volume appeal to the local disciples of Izaak Walton, that the fit

and fair place for its review would be the columns of a Northumberland or Durham sporting paper, not the *Athenæum*. Our provincial brethren, however, might object that it is hardly local enough. Almost all the tunes printed are *Scotch* tunes; whereas, we have always understood that the Wear and the Tyne have melodies of their own, distinct from those of Gala Water and "Loch Erroch side." Then, though the paper and type are of the most costly quality, making the book eligible for one of those libraries to which "a cut copy" hardly gains admission, and the pride of which lies in luxury, rarity and strangeness,—the uncouthness of the woodcuts, tail-pieces, of all, in fact, that stands for decoration, is nothing short of sheer poppery. The lyrics collected seem to us poor in the grace and nature which make poetry universal, whatever be its subject. Let some Angler's journal try and quote them; if it can, prove us in the wrong, and thus establish this book as a genuine contribution to provincial literature.

*Mysterious Legends of Edinburgh; now for the First Time told in Print.* By Alexander Leighton. (Edinburgh, Nimmo.)—"Mine own romantic town" (as Scott called Auld Reekie) is richer in legend than our London. Setting aside all the entrancing chain of stories that have Mary Stuart and her Maries, and Rizzio, and black, brutal Bothwell for centres, there is the tradition of Major Weir, the wizard, and his jackanapes,—of Lady Grange forcibly carried off into island captivity by her husband, whose story was turned to account in one of Miss Martineau's best short tales, 'The Billow and the Rock,'—of the Porteous riot,—of the Begbie murder,—of the stout butcher unwittingly killed by Dr. Cullen, the celebrated anatomist, as an illustration of a medical lecture on the power which imagination can exercise over the most robust and healthy of men. The students of his class (from one of whom we derive this story) were invited to walk past the shop of this man at short intervals: the first was to observe him, the second to ask him if he was well, the third to advise him home to bed, the fourth to feel his pulse, and so forth. The experiment, so runs the tradition (for ours is but a tradition, like many another, of which we have far less direct authentication), cost the "flesher" his life. The "subject" did go home, he did take to bed, he did sicken from absolute terror of Death, and died. Writing desultorily, as we are doing, we could string recollection on recollection of the mysterious stories of Edinburgh, outdoing any that we have here—not for getting the one now floating in the world of dinner-parties, of a certain house, in a certain London square, at present an object of much observation, which has struck shivering belief into people who do not believe in either Messrs. Home and Howitt or even the careful and credulous Mrs. Crowe. But Mr. Leighton's book is not so "obscurely wise" or mysterious as disagreeable. Take three specimens of the style: two from the Preface—"In the preparation of which," says Mr. Leighton, "happily, there has been small expense of either the oil of Demosthenes, the wine of Anacreon, or the opium of Coleridge." Again, he announces that "his object was merely to tell a story which might be invested with so much more of that verisimilitude derived from an imitation of nature as would result from truth being at the bottom of the superstructure." Once more, we will extract from 'Lang Sandy Wood's Watch' a link which binds two incidents together:—"Leaving all dubieties, we get again among verities." Who could bear "the story of Cambuscan bold," or of the King one half black marble, in the Arabian Nights, or Fair Rosamond and Queen Eleanor, were the same set out in such a fashion as the above? Better have common boor's language, which goes straight to the point. And this defect of style is one reason why we think this new collection of the mysteries of Edinburgh more disagreeable than mysterious.

*The Schooling of Life.* By R. St. John Tyrwhitt, M.A. (Macmillan & Co.)—A little collection of essays on conduct in life, good and bad habits, and the like. Mr. Tyrwhitt has, apparently, spent all his days as a neat and thriving "don" at Oxford, a circumstance which may account for a certain dolce-far-niente tone and gentle contempt for mechanical

labour which creep out now and then. The book contains a chapter on working with all one's might; but the author only believes in hard work as a kind of ideal which we must not approach too closely. It is very much the same with other subjects; we find extremes pretty generally condemned, but the mean not very clearly defined. Something a little more close and incisive would be desirable, as the book is intended for practical instruction, and does not aspire to the rank of an ethical treatise. Now and then a striking idea is brought out, as, for instance, when young men are warned against that mere smattering which in our country so often does duty for knowledge of a science or language. It certainly is rather singular that all Englishmen of good birth are supposed to be taught French in childhood, and that so few know anything about it when they grow up. But the exclusive reverence for ancient lore which Oxford has done so much to foster has tended to keep living literature and science in the background. Who ever heard of a first-classman in Mathematics or in Law and Modern History (as such) being elected to a Fellowship? Cambridge has always been more liberal, for although noted as a Mathematical University, she has found room on her college foundations for distinguished classical scholars. But we have said enough; and, in conclusion, we shall only advise Mr. Tyrwhitt to make up his mind about many things, and to express his views more pointedly for the future.

*The Second Life—Dreams and Reveries—Visions and Nightmares—[La Seconde Vie. Rêves et Rêveries. Visions et Cauchemars].* Par X. B. Saintine. (Hachette & Co.)—Since M. Saintine gave to the world his "Picciola,"—that gentle tale which has spoken to so many hearts (as its thirty-eight editions testify),—he has not won any remarkable success as an imaginative writer: nor, we apprehend, has he much, if any, result to expect, from this—his latest production. There is no subject so tempting to dream about as the life of dreams; but to tell them good Dr. Watts assures us, is the occupation of "the voice of the sluggard." Without going the length of this practical and severe denunciation, one fact seems to us clear; namely, that the difficulty of telling any dream whatsoever is little short of insurmountable. The inconclusive, disappointing vagueness, the mysterious influence which, during the hours of sleep, prevents the traveller from ever arriving at his journey's end, and which stands betwixt the dead, recalled to existence and speech, and any real place and occupation in the homes from which they are lost, inevitably tincture the waking thoughts of the man who is strongest and most accurate in his memory; let him have been ever so vividly impressed by the visions which have been with him. At some juncture of the phantom, pageant or transaction, his recollection fails, or becomes confused, and few, very few are those who will then deny themselves the service, be it ever so slight, of Imagination, "to add and to eke,"—to give a completing touch to the marvel, a last emphasis to the monitory message. Hence, it is not surprising that great as is the number of registered dreams, so few of the records have such real interest as can appeal to the sympathies of those who are awake. These by M. Saintine do not profess, we fancy, to be other than the fancies of a novelist. As such they are weak, not revolting, but not particularly engaging. The collection is one easy to read, but as easy to forget.

Our reprints comprise *Reuben Medlicott; or, The Coming Man*, by M. W. Savage, which Messrs. Chapman and Hall have added to their "Standard Editions of Popular Authors,"—*Tangled Talk: an Essayist's Holiday* (Strahan & Co.),—*The History and Antiquities of Northamptonshire*, by the Rev. Thomas James (Murray)—*Mary Howitt's Sketches of Natural History* (Bennett)—and Vol. I. of *the Lives of the Most Eminent English Poets, with Critical Observations on their Works*, by Samuel Johnson (Parker).—We have on our table Second Editions of *Colston, the Philanthropist; Memorials of his Life and Deeds*, by S. G. Tovey (Bristol, Taylor)—and *The Simplicity of Creation; or The Astronomical Monument of the Blessed Virgin; a New Theory of the Solar System, Thunderstorms, Water-spouts, Aurora Borealis, &c., and the Tides*, by W.

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Adolph (Burns & Lambert), and a Third Edition of *The Bath Waters, their Uses and Effects in the Cure and Relief of Various Chronic Diseases, by Dr. Tunstall (Churchill & Sons)*.—These Miscellanies may also be announced: *Care as to the Legal Force of the Judgment of the Privy Council, In Re Fendall v. Wilson; with the Opinion of the Attorney General and Sir Hugh Cairns, and a Preface to those who Love God and His Truth*, by the Rev. E. B. Pusey (Parker)—*Peru and Spain, being a Narrative of the Events preceding and following the Seizure of the Chinca Islands; with an Analysis of the Despatch of Senor Salazar y Mazzaredo, detailing his Adventurous Voyage Home-wards*, by Capt. F. E. Cerruti (Williams & Norgate)—*The Russian Agents in India*, by a Traveller from the East (Ridgway)—*Guide de l'Amateur de Porcelaines et de Poteries; ou, Collection Complète des Marques de Fabriques de Porcelaines et de Poteries de l'Europe et de l'Asie*, par Dr. J. G. Théodore Grasse (Dulau & Co.)—and *The Book of Common Prayer, and Administration of the Sacraments, and other Rites and Ceremonies of the Church, as Amended by the Westminster Divines, in the Royal Commission of 1661, and in Agreement with the Directory for Public Worship of the Presbyterian Church in the United States* (Trübner & Co.)

LIST OF NEW BOOKS.

Beale's How to Work, Microscope, 3rd edit. illus. or 8vo. 12/6 cl.  
 Brewer's The Young Tutor, 18mo. 3/6 cl.  
 Burton's Mission to Gelele, the King of Dahome, 2 vols. 8vo. 25/- cl.  
 Cassell's Bible Pictures and Stories of the Testament, Vol. 76 cl. gt.  
 Chaucer's Canterbury Tales, 4th edit. 2 vols. 25/- cl.  
 Cooley & Brough's Encyclopedia of Recreations, 4th edit. 8vo. 28/- cl.  
 Crosses, The, of Childhood, or Alice and her Friends, cr. 8vo. 1/6 cl.  
 Dumas' Spectre Mother, 12mo. 2/- bds.  
 Free's Marriage Life of Annex of Austria, 2 vols. 8vo. 30/- cl.  
 Haskell's Examples in Bridal and Domestic Composition, 42/- swd.  
 H. C. G. The Count of Charolais, 3 vols. post 8vo. 21/- cl.  
 Hume & Smollett's History of England, new edit. 8 vols. 8vo. 90/- cl.  
 James's Mary of Burgundy, cr. 8vo. 1/- swd.  
 Keysell's Memorials ('The Earliest Life'), by M'Cullagh, cr. 8vo. 5/- cl.  
 Leathem's Charmonie, cheap edit. fe. 8vo. 2/- bds.  
 Macleod's Theobald's Collected Works, Vol. 9, cr. 8vo. 6/- cl.  
 Practical's Statistical Studies, 1864, 10/- cl.  
 Quiver, The, Vol. 6, royal 8vo. 4/- cl.  
 Rev. Alfred Hobhouse and his Curacies, cheap edit. fe. 8vo. 2/- bds.  
 Richardson's Packing-case Tables, long fol. 4to. 3/- cl. bds.  
 Ross's Tales of the Castle, 2 vols. post 8vo. 21/- cl.  
 Sam's Breakfast in Bed, cheap edit. 12mo. 2/- bds.  
 Shakespeare, ed. by Knightley (Elizerv Series), Vol. 4, fe. 8vo. 5/- cl.  
 Stanford's New Map of Ireland, 10/- cl.  
 Statute, 1654, royal 8vo. 14/- bds.  
 Tatham's Dream of Pythagoras, 4th edit. Memoir, &c. 8vo. 3/- cl.  
 Trevlyn, Mrs. 19 vols. post 8vo. East Lynne, 6/- cl.  
 Trollope's Anna of the Five Towns, 3 vols. (Vol. I, 1), 8vo. 11/- cl.  
 Trollope's Rachel Ray, cheaper edit. post 8vo. 5/- cl.  
 Walton's Complete Angler (Elizerv Series), fe. 8vo. 4/- cl.  
 Wood's Lord Oakburn's Daughters, 3 vols. post 8vo. 31/- cl.  
 Wroxall's Historic Eye-witness, 3 vols. post 8vo. 21/- cl.

CAPTAIN SPEKE

A French journalist, recording the death of Lieut. Burnes in the Cabul affair, remarked that he was one of those men of whom England was proud and the whole world envious. It is just such another man the loss of whom we are all deplored by the unlooked-for death of Capt. Speke. The first African explorer, Thompson, of the African Company of Merchants, lost his life, on the scene of his great perils, two centuries and a half ago. Of the three latest—Speke, Burton and Livingstone, who were to have assembled at the Meeting of the British Association at Bath—the one made famous by his alleged discovery of the sources of the Nile, failed to appear on the day he was to have encountered Burton. On the morning of that day, while out with a friend, shooting partridges, the accidental discharge of his own gun stretched him dead beneath the autumnal elms. Bruce, who penetrated to the fountains of Geesh, and in the head of the Abyssinian Blue River, claimed to have discovered the sources of the Nile, survived all the dangers by which he had been environed, to die of a fall down his own staircase at Kinnaird, while performing an act of courtesy to an aged lady. Speke, no more fortunate than Bruce, after discovering the great lake which feedeth the once mysterious White River, and speculating on his chances of passing a happy life there, "with a wife and family, garden and yacht, rifle and rod," came home to lose his life by a mortal mischance.

There is a marked and significant difference of character between the earliest and the most recent explorers of Africa who have taken their departure, or the authority of their mission, from England. Such authority was given by the African Company, which was founded in London, in 1618, to Thomp-

son, the Barbary merchant, whose task was of no more especially noble character than to ascend the Gambia in search of gold. Thompson went up that river as far as Tenda, where he met that violent death which has caused him to be recorded as the first victim, if not the first martyr, in the cause of African discovery. Feeble and resultless were the few attempts that were made till another century had passed. The London African Company was almost bankrupt in 1723, when the first Duke of Chandos found himself at its head as director. His Grace hoped to restore the company to solvency by renewed endeavours in search of gold: and it was under his auspices that Capt. Stibbs ascended the Gambia; but only to be turned back at Tenda, like his predecessors. A similar result was experienced in various subsequent expeditions. The shallows and sand-banks were barriers that kept the supposed golden heart of Africa secure from the covetous desire of the outer world.

There are old men yet living who can remember the year in which a new and more honourable impulse was given to this cause of African discovery. Men of distinguished dignity in the ranks of nobility, the church, science, and commerce associated themselves together in the year 1788 and, making their wealth subservient to their noble purposes, the spirit of enterprise, in place of being influenced by mercenary motives, was now moved by purer springs of action. Central Africa was now to be explored, with a view to the advancement of geographical knowledge. The first committee consisted of Lord Rawdon, now better known as the Marquis of Hastings, who governed India, Watson, the then new Bishop of Llandaff, Sir Joseph Banks, Mr. Stewart, and Mr. Beaufoy. To this association are due the noble efforts heroically made by Ledyard, Lucas, Houghton, Park, Horniman, Burckhardt, Lander, and the not less illustrious men who have succeeded them. There have been others not inferior in renown or usefulness who have taken Africa for their field of enterprise on their own responsibility, or under the sanction of Government, or with the authority of religious missions here at home. Capt. Speke's appearance at the Royal Geographical Society, on his return from Victoria Nyanza, will not be forgotten by the assembly there met to welcome him, and to listen to the first notice of his triumphs from his own lips. That Society is the representative of the old African Association of 1788, the latter having merged into the former in the year 1831. In that year, he who was to prove the most successful of their legates, if we may use that term, was a boy running about his native Somersetshire fields, with barely five light years upon his head! What laurels he was destined, and was determined, to reap before that fatal day of the last week in a peaceful meadow, and by the side of a kinsman, he fell by the weapon which he himself loaded, and which he that day bore!

This Indian soldier and African traveller was born at Jordans, in Somersetshire, in 1827; and to the last nourished that pride in his home and his country which distinguishes all wandering tribes and individuals from the Arab to the Swiss. "You may depend upon it, gentlemen," such were the words he uttered last year at Taunton, when his fellow-countrymen honoured themselves by having him for a guest, "it was the pride both of my country and my country that carried me through my undertaking." Wherever he happened to be he "thought of home," he said, "and worked accordingly. In 1844 he entered the army, and soon became remarkable as a sportsman and naturalist. His early exploits were confined to India; a great field in which he worked most heartily. India led him into Africa; but years elapsed before the crowning glory of his life arrived. Whether he has actually discovered the *Source* of the Nile, is still an open question. His own declaration that, in 1858, he "hit the Nile upon its head," and that, in 1863, he "drove it into the Mediterranean Sea," is perhaps no more than a boast. He had, at all events, more nearly accomplished those ends than any other man, living or dead, in theory or in more important practice. He had come upon the great water which poured over Ripon Falls, and he traced this out-pouring stream for 100 of the 300 miles which in

tervene between the outlet and the known channel of the river at Miani's Tree.

Had Capt. Speke survived, some controversy would have been held between him and his former companion, Capt. Burton, at Bath, on the very day of the traveller's sudden death. There is some idea abroad that Speke had not, on all occasions, rendered full justice to other explorers, in idea or in fact, about the same waters of which he had been in search, and which he discovered. Omitting all reference to what Speke is said *not* to have done, let us remind our readers of what he said and did. At the Taunton dinner, to which we have already referred, Capt. Speke noticed Dr. Beke's claim to be the theoretical discoverer of the head-waters. Speke acknowledged that the Doctor had doubtless imagined the existence of such waters near the locality in which they were found; but the assertion of their existence had been made by native Africans long before. The missionaries, Rebmann and Edhardt, had been told of such a collection of water by the natives. This communication was made about ten years ago; and one of the missionaries sent notice of that fact to the Royal Geographical Society in England. By that Society, Capt. Speke, who knew the use of surveying instruments, was commissioned to accompany Burton, with whom he had formerly served in Africa, in search of the waters of the lake and their outlet. At Kingam, they were told of three lakes, the Nyanza, the Tanganyika, and the Nyassa. Burton elected to go to the Tanganyika, and Speke accompanied him. There, Burton fell ill; the supplies were exhausted; and he resolved to return; but Speke had then discovered the southern end of Nyanza, and next year, in company with Grant,—Burton being then unable to accompany them, as he otherwise would have done,—made that discovery of the outlet of the head-waters of the Nile which rewarded all he had undergone in accomplishing it. The first honours, according to his own account, fell fairly to the man who can now no longer enjoy them; but Grant and Burton, as members of the general expedition, are entitled, in separate ways and degrees, to ample honours, too. Figuratively, England crowns each explorer with laurel, nor thinks the less of Burton merely because the accident of illness prevented him from reaching the long-sought goal at which his more fortunate comrades ultimately arrived.

That Capt. Spoke was eminently fitted for what he undertook may be asserted on the ground of his unquestioned success. He had undergone all the necessary training. He had served from his youth in the Indian army; and in Sir Colin Campbell's division he went through that fierce Punjab campaign so marked by difficulties, disasters, sanguinary victories, and abiding triumphs. His seasons of relaxation were to him only times of another sort of labour. He had not the "leisure to be ill," or he mastered the infirmity by applying himself to pursuits that were all of noble, refining, and of practically useful purpose. When the question of presenting him with a testimonial was being discussed, we expressed a hope that it would be of such sort that in it his future wife might see, and his future children might learn, how his country had honoured the husband and father; but Capt. Spoke was not allowed the happiness of founding a family that might be proud of him as the especial chief of their line. His country, however, will never fail to enrol him among the most meritorious of her sons. A cast of his face was taken after his death, and a memorial bust of him will find a suitable place in the shire-hall of Taunton.

## JACKSON'S HORSE AND THE HORSE OF JACKSON'S

JACKSON.  
New Malden, Sept. 16, 1864.

Mr. Manning writes: "if from the latter phrase" (i. e. a horse of Jackson's as opposed to Jackson's horse) "it could be inferred that Jackson was the

owner of several horses, such an inference would not be the consequence of the presence or of the position of the possessive augment. It would be due simply to the presence of the indefinite article. A horse, i. e. one horse, of Jackson's, is a form of expression which would be seldom adopted unless Jackson were believed to be the owner of more horses than one."

Now, the statement to which I most especially demur is that which refers the inference of Jackson having more horses than one to the simple presence of the indefinite article. For *indefinite article* I would write the preposition of.

This is a word that suggests partition; so that a *horse of Jackson's* means, at the first view, a *horse from or out of Jackson's horses*. Yet, what if a single steed formed the whole of Jackson's stable? If so, the inference that he had many, or even two, would be wrong. But *inference* is too strong a word to apply to the question.

What does the construction imply? This leads us to the parsing. What does the preposition of govern? Certainly not *Jackson's*. In the *head of a horse* there is nothing in the construction which coincides with a *horse's head*. I say in the construction; because, in the sense which results from the combination, there is something of the kind, i. e., there is strong similarity in meaning between a *head of a horse* and a *horse's head*. And this is the cause of a confusion which few of our grammarians have escaped. *Of* followed by a substantive gives a meaning so like that of the real genitive or possessive as to pass for a prepositional genitive. Nevertheless, what of really governs is a second substantive understood; and this substantive is neither genitive nor possessive in the ordinary sense of those terms. Of course, if we choose to define the genitive as the case governed by *of*, we can make it so; but even if we thus alter a term, the term ablative would be preferable. In languages where the case-endings are definitely marked it is the ablative which is most especially governed by the nearest equivalents to *of*, namely, *de* and *ex*, the former more especially.

Now let us suppose that a Latin scholar meets the words *quidam de Cæsaris*. What would he know about the construction? Even this—1st. That *Cæsar* was not governed by *de*. 2nd. That some word not expressed was governed by it. 3rd. That that word was in the ablative case.

*Mutatis mutandis*, the words *equus de Jacksoni*—a *horse of Jackson's* must be similarly treated. There is a word governed by *of*, and that word is understood. Its case is a different question. It is only certain that it is the same as that of the word *horse* in *head of a horse*, and different from that of *Jackson's*.

The reasoning, then, runs thus. *Of* suggests *Part*, *part Whole*, *Whole* something *over and above* the part limited, or *cut off*, by *of*.

But, though I hold that in ignoring of and laying all the stress on *a*, Mr. Manning has attributed the power to the wrong element, I freely admit that the nature of the word which precedes the first substantive may have much to do in determining how far other objects with the same name as the substantive thus preceded may be suggested. Certain words will strengthen, others neutralize, the notion suggested by the preposition. In *one horse of Jackson's* the notion of *more horses* is as decided as can be; and the full construction *one horse of Jackson's horses* is plain and patent. On the other hand, the following example makes the second horse a very doubtful animal. "That the effect is produced solely by the presence of the indefinite article is obvious, when it is considered that if the phrase used were 'That horse of Jackson's is dead lame,' it would not be inferred that Jackson had other horses, or another horse with four sound legs." Instead of this write "*that solitary horse of Jackson's is dead lame*," and all doubt is removed. The same is the case with "*that head of Jackson's is always aching*." Here the suggestion that there is only one *horse* (or *head*) is at its maximum of strength.

But, in these last given instances, another principle is at work. It is only by throwing the words in this form that we can use the word *that* at all.

*That Jackson's head* would give us *that* in connexion with *Jackson*.

Nevertheless, the notion of Part and Whole invariably connected with the use of *of*, is never utterly lost, not even when the text notoriously gives us a Whole, as in *that winner of this year's Derby of Jackson's*; and this is because such a horse, though as a *horse* it is as single an object as *that head of Jackson's* is still something of Jackson's, and as such it is contemplated. It is the member of some class. What this class is depends on the context. The presumption is in favour of its being *horse*; but, failing this, it belongs to some class in which horses are included. One speaker may consider this word to be *possessions*, another *racing materials*, another *things*. In all cases, however, there is a second substantive, and the name of this second substantive is the word governed by *of*, also the name of that class which comprises something beyond the object specially named.

The term *all of them* is no exception to the statement laid down as to the extent to which *of* suggests the notion of a part. The sum of the parts is the whole, and in *all of them* we take cognizance of the component parts as well as of the resulting whole.

Such are the objections to a doctrine in which there is much with which I agree; the main point of difference being the import of the preposition of. I make the word on which the whole construction turns; in which construction a second substantive is understood. In the case before us it may, or may not, be *horses*. It must, however, be the name of a class to which a *horse* can be referred.

R. G. LATHAM.

#### PARALLEL TERRACES.

Brookwood Park, Alresford, Sept. 20, 1864.

IN the *Morning Post* is Lord Milton's account, given at Bath, of his great exploit, the passage of the Rocky Mountains. His Lordship concludes by "calling attention to the benches and terraces which are to be found on the opposite banks of the Thompson river." As valleys are formed by atmospheric disintegration and the erosion of "rain and rivers," the same valley will be found wide, directly as the strata are soft, and narrow, directly as they are hard. But where hard strata narrow the valley, they form a gorge and a barrier in the bed of the river. This checks flood water, and forms an alluvium on the wide valley above. But as the barrier is worn down, the alluvium is cut in two by the river, and is finally carried away. But till this process is absolutely finished two parallel terraces exist. You did me the honour to publish this theory of mine last year in reference to the parallel terraces of Glen Roy, and I then said that it would be found a universal principle. But as poor human nature must have something to marvel at, this principle (which may be seen in operation) is too simple. We prefer to explain the *ignotum per ignotius*, and call in that most monstrous of all monstrosities, "the Glacial epoch."

GEORGE GREENWOOD, Colonel.

#### OUR WEEKLY GOSSIP.

THE Consulship of Science for 1865 has been given to Prof. Phillips, of Oxford. The British Association will meet next year at Birmingham, when Sir Charles Lyell will surrender his presidency to Mr. Phillips. The Vice-Presidents will be: Lord Leigh, Lord Lieutenant of Warwickshire; Lord Lichfield, Lord Lieutenant of Staffordshire; Lord Wrottesley; the Bishop of Worcester; the Right Hon. C. B. Adderley, M.P.; W. Scholfield, Esq. M.P.; J. T. Chance, Esq.

The British Government has given 500*l.* to the sister of the late Dr. Edward Vogel, who lost his life in Central Africa whilst travelling for the Foreign Office, giving his services gratuitously.

Capt. Burton has been removed from the Consulate of Fernando Po, in West Africa, to that of Santos, in South America. The rule of the Foreign Office is to allow six months leave of absence on every change of residence; these six months will be devoted by Capt. Burton to renewed explorations in Africa. He hopes to ascend the Congo to its source.

The Imperial German L. C. Academy has conferred upon Mr. Richard Spruce the degree of Doctor of Philosophy, in appreciation of his eminent services as a scientific explorer and traveller of the first order. Dr. Spruce was for some time the companion of Messrs. Bates and Wallace in South America, but his explorations extend over a much wider range of country, and over a period of fifteen years.

Bacon is acquitted of the Paradoxes! In the *Notes and Queries* of Sept. 17, the Rev. Alexander B. Grosart (1st Manse, Kinross) has proved that Bacon was not the author, to all who admit that Bacon was not Herbert Palmer, B.D., Master of Queen's College, Cambridge, or his prompter. The reservation is necessary in an age in which it has been asserted that Bacon wrote Shakespeare's plays. Palmer gave these paradoxes, nearly word for word as attributed to Bacon, in his 'Memorials of Godliness and Christianity,' published in 1644. In the second part of this work is the 'Character of a Christian in paradoxes and seeming contradictions.' Mr. Grosart proposes to republish the 'Memorials,' &c., for private circulation among subscribers at a price not exceeding 3*s. 6d.* Those who desire to subscribe are to communicate with himself at the address above. A biography will be added. Mr. Grosart seems to set a value on the paradoxes themselves; we are glad to help in putting the saddle on the right horse. Herbert Palmer was a landed proprietor of considerable fortune, and was a "polite gentleman," able to speak French as well as he spoke English. He was, nevertheless, a Puritan, and a member of the Assembly of Divines. Laud gave him a living, and produced this fact on his trial, as a proof of his disposition to encourage merit of different views from his own. At least thirteen editions of the 'Memorials' were published: the thirteenth in 1708. Strange that the *Paradoxes* should continue to be attributed to Bacon, while they were so widely circulated in the writings of the true author. We now see that they are in real earnest; not satirical nor malicious. Had he been Bacon's, the world might have suspected covert satire. But as the work of a genuine, earnest Puritan and a fine gentleman combined, we begin to understand the phenomenon. Palmer must be a curious study, and we have no doubt that Mr. Grosart's subscription list will show that he has excited curiosity. We add one more remark. The Paradoxes, as we see, are the expression of deep Puritanism; and yet so completely are they in the phraseology of the Establishment, that no one has either said that Bacon must have been a Puritan, or has doubted his authorship of the Paradoxes on account of their Puritanism.

In addition to the appointments of Dr. Woolley, as Inspector and Director of Studies, and of Mr. Merrifield, as Principal, of the School of Naval Architecture about to be opened at South Kensington, the Committee of Council have appointed as Vice Principal, Mr. Purkiss, the Senior Wrenger and First Smith's Prizeman in the present year.

MR. ROBERT BUCHANAN, the author of 'Understones,' has a new poetical drama, in three acts, called 'The Witchfinder,' in rehearsal at Sadler's Wells Theatre.

A sergeant and four privates of the Royal Engineers sailed from Southampton last week for Alexandria, on their way to Jerusalem. They are going out to make an exact topographical survey of the city and neighbourhood, including all its more famous hills and valleys. It sounds strange to hear that so necessary a work has never yet been done. We have a few elevations, a few sections; but the figures and plans of travellers differ very considerably one from another. Yet the most important questions often turn upon the relative heights of Gareb, Zion and Bezetha. We hope that in this new effort to extend our knowledge of holy sites every care will be taken to allay the natural jealousy of the Turkish Government. In the eyes of Surya Pasha, Jerusalem is not a great monument so much as it is a great fortress; and many of us know with what sternness a Christian people refuses to admit foreigners into its strongholds. On no pre-

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tence whatever should we permit French military engineers to make a survey of Gibraltar, nor would the Austrians allow Italian engineers to map and measure the approaches of Venice. But the new Sultan is a liberal ruler; and if proper courtesy is used towards his officers, leave to carry on these interesting labours will probably not be denied.

The Bishop of Peterborough's agent,—that is, the Bishop himself,—threw a notice “at” the Bishop of Natal, while he—i.e., Natal, not Peterborough—was kneeling at the communion-table. This fact belongs to the history of our Establishment. We have no doubt the agent is a country attorney, who is in the habit of “serving,” and has probably heard the phrase “serving at the altar,” which made him take the above proceeding to be the correct thing. In like manner the attorney who was in the old volunteers, hearing the word “Charge bayonets!” pulled out a memorandum-book from mere habit, and debited Mr. Bayonets 6s. 8d. The quiet manner in which Bishop Colenso would neither see nor hear was a mode of “accepting service” worthy of the place he was in. But we notice this matter not to introduce a bit of the contemporary history of religion, but to record something, which, to our minds, has a bearing on the history of literature. The incumbent of Claybrook and Lutterworth, the Rev. R. H. Johnson, makes the following resistance through his curate, the Rev. Lewis Wood:—

“Our vicar is now an old man; four score and three have been the years of his pilgrimage, and forty-eight of those years he has spent, by God's mercy, as the pastor of this parish. During that time has he not laboured, however feebly, to declare the whole counsel and truth of God among you, and to have his conscience clear of the blood of all of you? You cannot expect him to live much longer among you. As an aged minister, then—one who is fast drawing near to the eternal world—as your pastor for so many years, who has striven by God's help to sow the seed of life among you, and you must before long be called hence to give an account of his ministry, he desires to deliver his solemn testimony this day among you with reference to the work done by the Bishop of Natal. We heartily and entirely approve that work. We believe him to be a true and faithful servant of God, who is doing his utmost to advance the cause of true religion, and to promote the solid, lasting welfare of our national Church. We know that his books have been condemned by many—that he himself has received hard names from many—and I am sorry to say from some of those in authority as bishops of the Church. But so it has been in all ages. In our own neighbourhood Wickliffe, the great reformer of Lutterworth, was also in his day defamed and calumniated, and would have been burnt alive if the bishops of the time could have done it with him as they did it with many others. . . . We charge you, therefore, brethren, do not listen to the hard and uncharitable speeches which you may hear many—make—men high and low in the Church—about Bishop Colenso. He has sought not the praise of men, but the praise of God, in his work, and with that we doubt not he will be satisfied. It is our firm belief that, as Wickliffe put first an open English Bible into the hands of his fellow-countrymen, so the Bishop of Natal has been one of the first to do his part—and he has done it manfully and well—to advance still further the work of the Reformation, and to enable English laymen to read that Bible for themselves, when opened, thoughtfully and intelligently, as God who gave His book would have them read it, and not with the blind, unreasoning credulity of a priesthood people.”

—Perhaps the Bishop will give the two clergymen what the French call a *plat de son métier*. But English blood will not be prevented from rising. Even when under the See of Rome, our nation held the Pope in check: how will it be with our present power of resistance, and the Bishop's present power of coercion?

We are requested to state that the balance-sheet of the Art Exhibition for the relief of the distress in the Cotton Districts shows a profit on the side of charity to the amount of 2,550*l.*; a very handsome sum, realized in a very handsome way.

The following letter, inclosed to us by a respectable citizen of London, though it concerns a private interest only, has some claim to insertion in our columns inasmuch as we carried the first notice of the fact to which it refers to the writer's home in Tasmania:

“Hobarton, Tasmania, Jan. 22, 1864.

“In your issue of May the 10th, 1862, is a statement that 'Her Majesty, on the recommendation of Viscount Palmerston, has acknowledged the services of the late Mr. Superintendent Pierse in saving the Crown Jewels at the fire at the Tower in 1841, by a munificent gift from the Royal Bounty to his sister, Mrs. Nash.' Now, as I am the widow of the late Mr. Superintendent Pierse, it seems to me that if his services were entitled to any reward

I should most certainly be the person to receive it. At the time of his death, an application was made on my behalf to the late Prince Consort and the Duke of Wellington, but as it was refused then, I considered it final, and have never applied since. On reading the paragraph in your paper, I immediately wrote to Lord Palmerston and also sent letters from persons here certifying my identity, but have never received any answer. My son has also written to his Lordship twice, but no notice has been taken. It may be that letters from this far-distant place get passed over. As I feel that a very great injustice has been done to me, and that false representations must have been made by persons who could have no possible claim to reward for Mr. Pierse's services, I request the favour of the insertion of this in your paper, as it seems the only way left to me of calling attention to the matter. Trusting that you will do this, I remain,

ELIZABETH PIERSE.

—Of course we have no knowledge of the cause which induced Lord Palmerston to pass over Mr. Pierse's widow in favour of his sister. He may have had very good reasons, still it is only fair that the fact of the widow's existence should be made known.

A sensible thing has been done in the town of Brecon, South Wales, in the placing of a marble tablet on the front of the house where Mrs. Siddons was born, in order to keep the fact in memory. Some time ago, we heard that an attempt had been made to cause the erection of a tablet to the same end on the front of Turner's birthplace, in Maiden Lane, Covent Garden; it was stated, at the time in question, that the Metropolitan Board of Works had interfered, to prevent the execution of this plan, or in some other way obstructed its realization. If this be true, it is by no means creditable to the good sense of that body that it cannot discern the difference between such a tablet as that in question and a sign-board such as its legal powers may authorize it to suppress.

The *Moniteur* contains a list of 196 streets in Paris the names of which are to be changed.

The story of the condemnation, and supposed execution, of the two women, M'Laughlan and Wilson, at Wigton, is one not likely to be left at rest for some time to come. Macaulay has made his public familiar with the details of their death. Scottish piety has raised a monument in memory of it. It is certainly very hard to be told that the “martyrs” were reprieved, and the column commemorates an event which never occurred. A shrewd and critical people, like the Scotch, do not like to be chaffed for indulging in a false sentiment; and hence, in face of recent discoveries in the Wigton Session books, which prove that one woman recanted and that both women were reprieved, there are enthusiasts who believe that the two women were actually drowned in the manner described in Macaulay's romance. One such believer wishes to record in these columns his continued hope that the facts are true—in spite of the record; and we have no objection to his doing so. This writer says:—

“I must take the liberty to differ from your judgment that the recent discovery in the Session books of Wigton leaves the drowning of the women M'Laughlan and Wilson as uncertain as before. It is, first, highly improbable that a sentence that was never executed should have sat so heavily and for so many years on the conscience of a magistrate and have led him to submit to a public rebuke. The sentence referred to seems to mean a doom, involving execution. Further, the newly-discovered record places an important stepping-stone between the death of the women and the erection of the monument attesting its manner. It proves that in that interval the event by no means lay in oblivion, seeing that nineteen years after it occurred it was circumstantially revived in the judicial censure of an actor in it, then still alive. Is it not then incredible that a very few years later the event should be utterly and grossly falsified on a tombstone publicly placed almost on the spot where Baillie M'Keand did penance? The epitaph must be regarded as consistent with his remorse and public humiliation. That there was a reprieve is certain,

but literally only a reprieve or respite, at that time by no means synonymous, as in practice it now is, with pardon or remission of the chief penalty. Relapse of the poor women and their miserable fate seem to have followed. I adhere to this judgment in no party-spirit. The death of M'Laughlan and Wilson hardly equals in atrocity the murder of Beatrix Laing (see Chambers's ‘Domestic Annals of Scotland,’ vol. iii. p. 302), by the mob of Pittenweem, the year after Baillie M'Keand was taken to task.

K.”

—No impartial reader will fail to see the weakness of these arguments. Why is it “highly improbable” that Baillie who had sentenced these poor women should feel trouble of conscience in the after-time? The circumstances were such as to make it highly probable that he *would* feel remorse for the condemnation; all the more if they were not really put to death, for in that case he would be burthened with the consciousness of having exercised a cruelty beyond the occasion, and perhaps beyond the law. He had condemned the two women to a horrible death, which the most hateful government in our history had shrunk from inflicting upon them. The times, too, had changed: the cause for which the poor women were sentenced had become popular at Court; and the worthy Baillie's expression of grief at having been mixed up in that bad business may have meant no more than his regret on finding that he had been acting on the losing side.

WINTER EXHIBITION, 120, Pall Mall.—The TWELFTH ANNUAL WINTER EXHIBITION WILL OPEN ON MONDAY, the 31st of October. Exhibitors are requested to have their Pictures delivered prior to the 15th proximo; and those Artists intending to compete for the Premiums, be sure to give notice of the same to Mr. Henry Wallis, 50, Bedford Square, W.C.

MR. MORBY'S COLLECTION OF MODERN HIGH-CLASS PICTURES IS ON VIEW at the Royal Exchange Fine Arts Gallery, 24, Cornhill. This Collection contains examples of R.A.—Stanfeld, R.A.—Roberts, R.A.—Goodall, R.A.—Coxe, R.A.—Ward, R.A.—Madox, R.A.—Pritchett, R.A.—Dobson, R.A.—Cooper, R.A.—Leighton, R.A.—Calderon, R.A.—Saint, R.A.—Linnell, sen.—P. Nasmyth—Holman Hunt—Erskine Nicol—Gale—Dumfries—Miss Nutrie—Meissonier—Gérôme—Gallait—Willems—Frère—Verboeckhoven, &c.—Admission on presentation of address card.

## SCIENCE

### BRITISH ASSOCIATION.

#### SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—Prof. CAYLEY.

Vice-Presidents—Lord WROTHAM, W. H. HAWKINS, Prof. PRICE, Prof. BANISTER, Prof. WILSON, Prof. R. C. GRIFFITH, Prof. C. J. JENKIN. Secretary—Rev. G. BESKLE, Prof. FULLER, F. J. JENKIN. Committee—Admiral Sir E. BELcher, W. R. BIRT, Capt. GALTON, J. H. GLADSTONE, Dr. COLESON, H. ELLIS, F. G. GASSIOT, Capt. GALT, J. H. LEADSTONE, J. N. LEATHER, G. GRIFFITH, Prof. HENRY, T. A. HORN, Dr. LEE, J. N. LEATHER, G. GRIFFITH, Prof. HENRY, T. A. HORN, W. H. MILLER, Dr. A. MORITZ, Rev. G. MUND, A. F. OLDFER, Prof. PHILLIPS, Rev. C. PRITCHARD, W. H. L. RUSSELL, B. STEWART, Col. SYKES, W. SYMONS, W. SPOTTISWOODE, Prof. WILLIAMSON, Rev. T. W. WEBB.

#### THURSDAY.

The PRESIDENT made no lengthened Address in this Section, but contented himself, on taking the chair, with stating the regulations which had been adopted for the reading of papers.

‘Report on Luminous Meteors,’ by Mr. J. GLAISHER.—The Report contained numerous observations of fireballs, or the largest class of meteors, contributed for the Catalogue presented. The largest fireball described was seen on the 5th of December, 1863, which produced the vivid impression of lightning over the whole of the British Isles. Fireballs described in Paris are greatly underrated, for meteors of the largest class are there rated as only six times brighter than Venus. Two small fireballs were seen in a short space of time on the 21st of January, and two of the largest size on the 4th of July, 1864. Two fireballs closely followed the observation of a large meteor at Athens by Dr. Schmidt, on the 19th of October, 1863; one in England, and the second on the coast of Spain. This preference of individual dates is now well known, and receives the attention of the Committee. Like the fireball of 1783, the meteor was composed of large and smaller globes, recalling the showers of stones at L'Aigle and Strasraer. The mechanical theory of the heat, roughly estimated from the light of twenty shooting stars, doubly observed in August, 1863, proved the average weight of these to have been little more than two ounces. A similar estimate of the largest fireball of the present Catalogue

would furnish very nearly a hundredweight of material substance. Dr. Haidinger supposes that non-productive fireballs and shooting stars are loosely compacted in their substance, and thus accounts for their want of penetrating power. Prof. Newton and Mr. Herschel have concluded independently, that shooting stars commence at seventy miles and disappear at fifty miles above the surface of the earth. At sixty miles above the earth shooting stars are far more frequent than at any other altitude, and they are considerably more between forty and eighty miles above the earth than in all other elevations put together. The region from forty to eighty miles above the earth is the "stable atmosphere" of M. Quetelet, as determined by the heights of shooting stars. It cannot, on the received law of decrease of density, comprise more than  $\frac{1}{100}$ th part by weight of the total shell of the atmosphere; yet the 9,999 parts of the remaining atmosphere are very seldom molested by their presence. It appears necessary on this account to retrench very greatly the weights of unproductive fireballs and shooting stars. Examples in the present Catalogue of suddenly collapsing and rekindling meteors appear to favour an hypothesis that chemical affinities, unknown at ordinary temperatures, produce in similar meteors a considerable portion of their unaccountable excess of light and heat. Ten meteors have been estimated in the past year by referring their apparent courses to the stars. The average heights and velocities of these are: Height at first appearance, 103 miles; at disappearance, 68 miles; length of path, 79 miles; velocity, 49 miles per second. Frequent observations of the radiant points of shooting-stars are recorded in the present Catalogue. These have been observed on the 10th of August, the 30th of November and the 6th of December, 1863, the 2nd of January, the 10th and the 20th of April and the 10th of August, 1864, by referring the meteors to twelve perspective charts representing the whole circuit of the constellations as they appear at intervals of two hours above the vapours of the horizon in the latitude of Greenwich. The longest paths on these maps can be traced correctly with an ordinary rule; and by their prolongation the intersection of their lines determines the radiant point in showers, such as those of the 10th of August, 1863, and the 2nd of January and the 10th of April, 1864. Even solitary observations thus recorded, slowly accumulating from year to year, appear more correctly to the eye by this means than a meteoric shower observed without the aid of maps; while the radiant points observed in the past year, it was believed, would have escaped attention had not maps been specially provided in advance. The observations of meteors on the 9th and 10th of August, 1864, indicate a display, ranking very nearly with the general average of the phenomena, which, in the clear sky and absence of the moon, amounts to between thirty and forty per hour for a single observer constantly regarding the sky near the zenith. In numbers there was not half, and in brilliancy not more than a small fraction of the display of the previous year. It was less striking on the 10th than on the 9th of August, consistently with the ordinary conditions of leap-year. If any indication of periodicity can yet be traced in the fluctuations of this phenomenon, it is perhaps a minimum, at intervals of eight years, which has thrice occurred; and last in 1862. In the Appendices to the Catalogue notices of aërolitic falls have been collected, as well as abstracts of several recent papers on meteoric subjects. Prof. H. A. Newton has constructed the elements of the November meteoric ring solely from historical data in such a manner as to leave very little for further observations to supply. The orbit is almost circular, retrograde and inclined  $17^{\circ}$  to the ecliptic; with a precession of  $52^{\circ} 60'$  from a fixed equinox nearly equal to that of the equator, but in an opposite direction. The meteoric cloud extends over one-tenth or one-fifteenth of the periphery of this ring, and the velocity with which particles of this cloud arrive on the atmosphere of the earth is 20.17 miles per second, allowing for the attraction by the earth. The velocity of their passage through the air is 33.7 miles, or nearly forty miles per

second. The question of the radiant points of shooting stars has chiefly engaged the attention of the Committee during the past year. It is remarkable that a radiant point, which is the vanishing-point of straight lines seen in perspective, should not have been associated with the meteors of the 10th of April until the compiling of the present Report, for this date has long since been noticed by Baumhauer, in 1845, and again more recently by Wolf, while astronomers have been aware for more than thirty years that periodical meteors take their direction from definite vanishing-points amongst the stars. The number of such radiant points which remain yet to be discovered appears to be strictly measurable by the zeal of observers; nevertheless, Mr. Greg has been rewarded with very unexpected results indicating, at present, between twenty and thirty radiant points as giving rise to the great majority of shooting stars observed throughout the year. The long-continued observations of Prof. Heis, of Münster, corroborate the results of Mr. Greg, and they are now receiving extensions at the hands of Dr. Schmidt, of Athens. As this inquiry, pursued without the use of maps specially provided for the purpose, is very nearly hopeless, and indeed more likely to be pernicious than profitable to the interest of meteoric astronomy, the Committee earnestly desire that a grant of 40*l.* may be sanctioned for the purpose of lithographing the twelve charts now submitted and for printing copies for a selected number of competent observers.

'On the possible Connexion between the Ellipticity of Mars, and the general Appearance of its Surface,' by Prof. HENNESSY.—The physical characters of Mars have attracted considerable notice, on account of the supposed resemblance of that planet to our earth, and at the same time one of the most prominent of these characters presents a striking contrast with its terrestrial counterpart, namely, its ellipticity, which is estimated by most astronomers at a higher value than mechanical theory would assign, if the planet had been originally in a fluid state. In accordance with hydrostatical laws, a planet similar to Mars, and rotatory around its axis in the same period of time, should have an ellipticity very nearly approaching that of our earth. Two observers of great eminence, Bessel and Johnson, seem to have arrived at a similar conclusion. The observations made by the former were fully discussed by M. Oudemans in the 'Astronomische Nachrichten,' No. 883, p. 352. After combining the results of different observed diameters with various angles of position, by the method of least squares, Oudemans came to the conclusion that the observations gave varied and uncertain values for the diameters; and therefore that it was permissible to regard the planet as approximately spherical. Johnson, in the Radcliffe Observations for 1850 and 1853, discussed the results of measurements made with the heliometer, and arrived at substantially the same result. Although the late M. Arago referred to some of the author's views regarding terrestrial physics, as probably affording explanation for the anomaly of the large ellipticity which he assigned to Mars, in his posthumous publication on the structure of the planet, the author had heard the same eminent person express views almost identical with those flowing from the observations of Bessel and Johnson. At the same time, the simplification which the author endeavoured to introduce into the theory of the Earth's figure, will not, if applied to that of Mars, suffice to account for the usually received high ellipticity of that body. Abstaining, for the present, from any attempt at an explanation of this peculiarity, let us endeavour to trace out its consequences with reference to the configuration of that planet. It seems to be generally admitted that there is, in the neighbourhood of one of the poles of Mars, a great mass of brilliant matter, analogous to a mass of terrestrial snow. This very substance is even supposed, with great probability, to seriously interfere with the accuracy of telescopic observations, owing to the optical disturbances arising from the irradiation of such an extremely bright object. It is also manifest that if this substance should be snow, the varying seasons of the planet would cause

its dimensions to vary, and thus the power of the disturbing influence. These circumstances show that great caution should be used in accepting any results which are liable to be affected by the presence of this snowy patch, and they also necessarily imply the existence of a fluid like water in that part of the surface of Mars wherever the temperature is above the freezing point of the fluid. If this should be so, the generally assumed large ellipticity of Mars should be followed by another result. Several years ago, when controvorting and disproving an erroneous theory of the Earth's figure, put forward by Playfair, and which has since acquired some importance by being reproduced by Sir John Herschel, in support of his general views, and appealed to by Sir Charles Lyell, the author obtained mathematical expressions for the equilibrium of a fluid like water spread over an exterior abraded spheroid such as this theory assumed the Earth to be. It follows from these expressions that if the Earth possessed a very small ellipticity, or were spherical, it would consist of two great circumpolar continents, with an intermediate belt of equatorial ocean. I have assigned the dimensions of these continents, supposing the ocean to have its present volume. It also immediately follows that if the Earth had a very great ellipticity, such, for example, as that so frequently assumed for Mars, the reverse would take place, and the dry land would form an equatorial belt, while the poles would be enveloped in water. The dimensions of these circumpolar oceans, with the assumed ellipticity of Mars, could be also assigned, and they should exist on its surface, unless there should be great irregularities in the density of the matter composing the planet. The mechanical theory on which these conclusions are based is simple, and therefore the attention of observers may be directed to the inquiry as to whether, compared with our Earth, a greater predominance of dry land exists at the equatorial parts of Mars compared to its polar regions. If the author might venture to draw any conclusion from the results hitherto observed, and especially from the drawings appended to Mr. Lockyer's paper, in the 'Memoirs of the Astronomical Society,' he would say that no such predominance of equatorial land exists on the surface of Mars, and therefore if its appearances are partly due to the presence of a liquid on its surface, we must conclude that its ellipticity has been generally exaggerated, and that the results of Bessel and Johnson's observations are, upon the whole, nearer to the truth than those of other observers.

'On a suspected Change of Brightness in the Lunar Spot, Werner,' by the Rev. T. W. WEBB.

'On the Importance of adopting Methods for the detection of Change on the Moon's Surface,' by Mr. W. R. BIRT.—In order ultimately to set at rest the question whether the surface of the Moon is in a state of quiescence, or slight volcanic activity, the author proposed the formation of a perfect Catalogue of lunar objects.

'On the Possibility of constructing Ellipsoidal Lenses,' by the Rev. T. FURLONG.

'On the Cohesion Figures of Liquids,' by Mr. C. TOMLINSON.—This subject was introduced to the British Association at Manchester, in 1861. The author now stated the progress which had been made since that time, and introduced two new sets of figures. The principle of the examination by this method, is to place a drop of a liquid on the surface of clean water in a chemically clean glass, when a figure is produced which was characteristic of the liquid so tested, and capable of being used for its identification. The figure formed is a function of cohesion, adhesion, and diffusibility. If any one of these forces be varied, the figure varies. The figures of alcohol for example on water, mercury, the fixed oils, melted lard, spermaceti, paraffin, sulphur, &c., are all different. A new set of figures is produced by allowing the drop to subside in a column of liquid instead of diffusing over its surface. These last the author calls "submersion figures of liquids." The figure of a drop of oil of lavender in a column of alcohol thus produced is singularly complicated and beautiful. The test by cohesion figures was stated by the author to be so delicate as to readily distinguish differences between oils so closely related as the oleines of beef-fat and

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'On an easy Mode of Measuring Heights,' by Mr. MOGGIDGE.

'On the Earthquake and Storm in Sussex, 21st August, 1864,' by the Rev. E. B. ELLMAN.

#### SECTION B.—CHEMICAL SCIENCE.

President—W. ODLING.

Vice-Presidents—Sir C. B. BRODIE, Dr. C. G. B. DAUBENTON, Dr. J. H. GLADSTONE, Dr. W. A. MILLER, Dr. A. W. WILLIAMSON, Secretary—Prof. LIVILLE, Dr. J. HERON, M. A., M. R. S. T. A. F. A. A. B. Dr. T. ANDERSON, Dr. ATTFIELD, Dr. R. BELL, Dr. F. CRACE CALVERT, Dr. E. CATTON, H. DEANE, Dr. B. EDWARDS, Dr. W. FRANCIS, Rev. T. FURLONG, A. GAZES, J. P. GASIOT, Dr. J. H. GILBERT, E. A. HADLOW, W. E. HEATHFIELD, G. W. KNOX, H. MACADAM, Dr. H. M. NOLAN, Dr. B. H. PAUL, Prof. ROSCOE, H. C. SORBY, P. SPENCE, W. SPYRE, C. TOMLINSON, Prof. TENNANT, Prof. VONICKER, R. WARRINGTON, Col. YORKE.

THURSDAY.

The PRESIDENT said—"After the great diversity, or rather antagonism, of opinion which has existed for the last dozen years or so, I am almost bound to take a somewhat prominent notice of one substantial agreement which now prevails among English chemists as to the combining proportions of the elementary bodies, and the molecular weights of their most important compounds. The present unanimity of opinion on this fundamental subject, among those who have given it their attention is, I conceive, greater than has ever been the case since Dalton published his new system of Chemical Philosophy, more than half a century ago. As yet, indeed, the unanimity of practice falls considerably short of the unanimity of belief; but even in this direction great progress is being made, to which the publication of Miller's 'Elements of Chemistry,' Watt's 'Dictionary of Chemistry,' and Hoffman's 'Jury Report on the Chemical Products in the Great Exhibition,' will doubtless give a yet stronger impetus. As was well observed by Dr. Miller, at a previous meeting of this Association, 'Chemistry is not merely a science; it is also an art which has introduced its nomenclature and its notation into our manufactories, and in some measure even into our daily life; hence the great difficulty of effecting a speedy change in chemical usages alike so time-honoured and intimately ramified.' I propose, with your permission, to make a few remarks upon the history of this chemical reformation, more especially in connexion with certain points which some of its most distinguished leaders have scarcely, I think, correctly estimated. From the time when Dalton first introduced the expression 'atomic weight,' up to the year 1842, when Gerhardt announced his views upon the molecular constitution of water, there does not seem to have been any marked difference of opinion among chemists as to the combining proportions of the principal elements. That 1 part by weight of hydrogen, united with 36 parts by weight of chlorine, to form a single molecule of hydrochloric acid, and with 8 parts by weight of oxygen to form a single molecule of water, was the notion both of Berzelius and Gimelin, who may be taken as representatives of the two chief continental schools of theoretic chemistry. There was, indeed, no difference of opinion whatever between them as to the combining proportions of the three elements. Using the hydrogen scale of numbers, both chemists represented the combining proportion of hydrogen as 1, that of chlorine as 36, and that of oxygen as 8. Both, moreover, represented the molecular weight of hydrochloric acid as 37, and the molecular weight of water as 9. True it is that Berzelius professedly regarded the single combining proportions of hydrogen and chlorine as consisting each of two physical atoms; but since the two atoms of hydrogen, for instance, which constitute the one combining proportion of hydrogen, were chemically inseparable from one another, they were really tantamount to one atom only of hydrogen, and as a matter of fact were always employed by Berzelius as representing the single chemical atom of hydrogen, or its smallest actual combining proportion. Distinguishing thus between the physical atom and the combining proportion, Berzelius's recognition of the truth that equal volumes of the elementary gases contain an equal number of atoms was utterly barren. But, identifying the physical atom with the combining proportion, Gerhardt's recognition, or rather establishment, of the broader truth, that equal volumes of all gases, elementary

and compound, contain the same number of atoms, has been in the highest degree prolific. From Gerhardt's division of volatile bodies into a majority whose recognized molecules corresponded respectively with four volumes of vapour, and a minority, whose recognized molecules corresponded respectively with but two volumes, and from his proposal, in conjunction with Laurent, to double the molecular weights of these last, so as to make the molecules of all volatile bodies, simple and compound, correspond each with four volumes of vapour, must, I conceive, be traced the development by himself and others of the matured views of chemical philosophy which now prevail. With every respect for my distinguished predecessor in this chair, and for the accomplished Author of the 'Leçons de Philosophie Chimique,' from neither of whom do I ever venture to differ without fear and trembling, I cannot join with them in regarding the indication of Gerhardt's system as an imperfect return, and its remarkable maturation in these recent days as a more complete return, to the notions of Berzelius. It is true that the elementary weights now employed, with the exception of those for some half-dozen metals, are identical with the atomic weights of Berzelius; but so different are they from his combining weights, that fully four-fifths of all known compounds have to be expressed by formulæ entirely different from his,—namely, all those bodies, with but a very few exceptions, into which hydrogen, fluorine, chlorine, bromine, iodine, nitrogen, phosphorus, arsenic, boron, and the metals lithium, sodium, potassium, silver, and gold, enter as constituents. Fully admitting that the new system of atomic weights, as it now exists, is the joint product of many minds, —fully admitting that it owes its present general acceptance chiefly to the introduction of the water type by Williamson during Gerhardt's lifetime, and the recognition of diatomic metals by Wurtz and Cannizaro, after his decease,—and fully admitting, moreover, that some of Gerhardt's steps in the development of his unitary system were decidedly, though perhaps excusably, retrograde,—I yet look upon him, not I trust with the fond admiration of the pupil, but the calm judgment of the chemist, as being the great founder of that modern chemical philosophy, on the general spread of which I have already ventured to congratulate the members of the Section. Prior to the time of Gerhardt, the selection of molecular weights for different bodies, elementary and compound, had been almost a matter of hazard. Relying conjointly upon physical and chemical phenomena, he first established definite principles of selection, by pointing out the considerations upon which the determination of atomic weights must logically depend. Relying upon these principles he established his classification of the non-metallic elements into monohydrides, represented by chlorine, —dihydrides, represented by oxygen, —terhydrides, represented by nitrogen, &c.; and relying upon the same principles, but with a greatly increased knowledge of phenomena, later chemists have given to his method a development and unity, more especially as regards the metallic elements, which have secured for the new system the impregnable and acknowledged position which it at present occupies. The comparative unanimity which prevailed before the time of Gerhardt was the unanimity of submission to authority; but the greater unanimity which now prevails is the unanimity of conviction, consequent upon an intermediate period of solitary insurrection by general disturbance and ultimate triumph. Bearing in mind how much the origin of the new system by Gerhardt and its completion by his colleagues and disciples owe to a correct appreciation of the harmony subsisting between chemical and physical relations, we cannot but give a hearty welcome to any large exposition of mixed chemico-physical phenomena; and whether or not we agree with all his conclusions, there can be but one opinion as to the obligation chemists are under to Prof. Kopp, of Giessen, for the great addition he has recently made to our knowledge, and means of obtaining a further knowledge, of what has hitherto been but a very limited subject, namely, specific heat. The agreement of chemists as to the elemental atomic weights is tantamount to an agreement among them as to the

relative quantities of the different kinds of matter which shall be represented by the different elemental symbols; and this brings me to the subject of chemical notation. At one time many chemists even of considerable eminence believed and taught that Gerhardt's reformation had reference mainly to notation, and not to the association and interpretation of phenomena, and it became rather a fashion among them to declaim against the puerilities of notational questions. That the idea is of far greater importance than the mode of expressing it, is an obvious truism; but, nevertheless, the mode of expression has an importance of its own, as facilitating the spread of the idea, and more especially its development and procreation. It has been well asked, in what position would the science of arithmetic have been but for the substitution of Arabic for Roman numerals, the notation in which value is expressed by the change in position for that in which it is expressed mainly by the repetition of a few simple signs? It is unfortunately too true that chemical notation is at present in anything but a satisfactory state. The much-used sign of addition is, I conceive, about the last which would be deliberately selected to represent the fine idea of chemical combination, which seems allied rather, I should say, to an interpenetration than to a coarse opposition of atoms. The placing of symbols in contiguity, or simply introducing a point between them, as indicative of a sort of multiplication or involution of the one atom into the other, is, I think, far preferable; but here, as pointed out by Sir John Herschel, we violate the ordinary algebraic understanding, which assigns very different numerical value to the expressions  $x \cdot y$  and  $x \div y$  respectively. I know, indeed, that one among us has been engaged for some years past in conceiving and working out a new and strictly philosophical system of chemical notation, by means of actual formulæ, instead of mere symbols: and I am sure that I only express the general wish of the Section when I ask Sir Benjamin Brodie not to postpone the publication of his views for a longer time than is absolutely necessary for their sufficient elaboration. In any case, however, the symbolic notation at present employed, with more or less modification of detail, must continue to have its peculiar uses as an instrument of interpretation, and it becomes therefore of importance to us to render it more precise in meaning and consistent in its application. Many of its incongruities belong to the very lowest order of convention; such, for example, as the custom of distinguishing between the representation of so-called mineral and organic compounds, one particular sequence of symbols being habitually employed in representing the compounds of carbon, and an entirely different sequence of symbols in representing the more or less analogous compounds of all other elements. Now that organic and mineral chemistry are properly regarded as forming one continuous whole,—a conclusion to which Colbe's researches on sulphurated organic bodies have largely contributed,—it is high time that such relics of the ancient superstition, that organic and mineral chemistry were essentially different from one another, should be done away with. Although during the past year the direct advance of that crucial organic chemistry, the synthesis of natural organic bodies, has not been striking, yet on the other hand, its indirect advance has, I submit, been very considerable. Several of the artificially produced organic compounds at first thought to be identical with those of natural origin, have proved to be, as is well known, not identical, but only isomeric therewith. Hence, *reuler pour mieux sauter*, chemists have been stepping back a little to examine more intimately the construction both of natural organic bodies and of their artificial isomers. The synthetic power having been allowed of putting the works together in almost any desired way, it is yet necessary, in order to construct some particular biological product, to first learn the way in which its constituent bricks have been naturally put together. We accordingly find that the study of isomerism, or what comes to the same thing, the study of the intimate construction of bodies, is assuming an importance never before accorded to it. Isomerism is, in fact, the chemical problem of the day; and concurrently with its

rapidly advancing solution, through the varied endeavours of many workers, will be the advance in rational organic synthesis. It is curious to note the oscillation of opinion in reference to this subject. Twenty years ago, the molecular constitution of bodies was perceived by a special instinct, simultaneously with, or even prior to, the establishment of their molecular weights. Then came an interval of scepticism, when the intimate constitution of bodies was maintained to be not only unknown, but unknowable. Now, we have a period of temperate reaction, not recognizing the desired knowledge as unallowable, but only as difficult of allowance. And in this, as in many other instances, we find evidence of the healthier state of mind in which now more perhaps than ever the first principles of chemical philosophy are explored. Speculation, indeed, is not less rife, and scarcely less esteemed, than formerly, but it is now seldom or never mistaken for ascertained truth. Scepticism indeed still prevails; not, however, the barren scepticism of contentment, but the fertile scepticism which aspires to greater and greater certainty of knowledge. Chemical science is advancing, I believe, not only more rapidly, but upon a surer basis than heretofore: and while, with every advance, the prospect widens before our eyes, so that we become almost alarmed at contemplating what those who come after us will have to learn, we console ourselves with the determination that their labour of unlearning shall be as little as possible,—far less, we hope, than what we in our time have had to experience.

Second Report 'On the Application of Gun-Cotton to Warlike Purposes.' By a Committee, consisting of W. Fairbairn, J. Whitworth, J. Nasmyth, J. Scott Russell, J. Anderson, and Sir W. G. Armstrong, from Section G.; and J. H. Gladstone, Prof. W. A. Miller, Prof. E. Frankland, and F. A. Abel, from Section B.—Your Committee has simply to relate the circumstances that have taken the matter out of their hands. When the Committee was re-appointed at the Newcastle Meeting, another recommendation relating to gun-cotton was passed by the Association, namely:—'That it appears from the Report presented at this meeting by the joint Committees of the Chemical and Mechanical Sections, and by the discussions which have followed its presentation, that the subject of gun-cotton is possibly one of very great interest and public importance; and that whilst the General Committee have taken measures to continue on their own account the inquiries which have been presented in the last year, they are sensible that the British Association does not possess means for its adequate examination; they are desirous, therefore, of drawing the attention of Her Majesty's Government to the importance of a full and searching inquiry, conducted by a Royal Commission, into the various practical applications connected with the public service, for which this material may be suitable, and that with this view the Assistant-General Secretary be requested to cause the Report, with its accompanying documents, to be printed with as little delay as possible, and copies presented (accompanied by the Resolution) to the Right Hon. the Secretary of State for War, by a deputation, consisting of the President and Officers of the Association, accompanied by the Presidents of the Chemical and Mechanical Sections.' In accordance with this Resolution, as soon as the Report was printed, a copy was presented to Lord De Grey, at the War Office, by a deputation headed by General Sabine. This took place on December 11th. Much interest on the subject was excited in many quarters, and a large number of the separate copies of the Report were asked for and circulated. In January the Government appointed, not a Royal Commission, but a Committee to investigate the subject in all its bearings. It consists of General Sabine, as President, General Hoy, Capt. Brandreth, R.N., Commander Liddell, R.N., Col. Boxer, R.A., Col. Lovell, R.E., T. A. Abel, Esq., T. Sopwith, Esq., Prof. W. A. Miller, Prof. G. G. Stokes, and Dr. J. H. Gladstone, with Major Miller, R.A., as Secretary; representing thus—the army, the navy, military and civil engineering, as well as chemical and physical science; and comprising, as will be seen, three of

the members of your Committee. The Messrs. Prentice, who were present at the Newcastle Meeting, immediately established a manufacture of the article at Stowmarket, and which has furnished materials for many experiments on the use of gun-cotton for quarrying purposes. The Government Committee is already engaged in a systematic course of experiments relating to the manufacture and keeping qualities of gun-cotton, and its use in artillery, small arms, and engineering. Your Committee, therefore, consider that their work is accomplished, since the application of gun-cotton to military purposes is now in a fair way of being investigated with greater facilities and means than could have been at their disposal.

'On the Analysis of a Hot Spring containing Lithium and Cesium in Wheal Clifford,' by Dr. MILLER.

'On the Thermal Waters of Bath,' by Dr. DAUBENY.—After alluding very briefly to the mineral constitution of the Bath waters, as affording no adequate explanation of the medicinal virtues ascribed to them, the author proceeded to one point of scientific interest connected with their appearance, namely, the large volume of gas which they have gone on continually disengaging, apparently from time immemorial. The nature and amount of this was made the subject of the author's examination in the year 1832, during an entire month, and the result arrived at was that the gas consisted mainly of nitrogen, which is present, indeed, in most thermal waters, but in none so copiously as at Bath. Judging from the circumstance that the majority of these springs are associated with volcanoes, and likewise that the same gas is freely evolved from the latter, both in an active and in a dormant condition, we may fairly infer that the evolution of nitrogen is in some way or other connected with the same widely-spread and deep-seated cause. And if this really be the case, the phenomenon in question acquires an additional interest, as affording a possible clue to the true nature of the processes which give rise to volcanoes as well as to thermal springs. Now this evolution of nitrogen seems best to admit of explanation by supposing a process of combustion to be going on in the interior of the globe, by which oxygen may be abstracted from the common air which penetrates to these depths, whilst the residuary nitrogen is evolved. What may be the nature of the bodies by which this process of combustion is maintained must of course, from the depth at which the latter is carried on, be shrouded in mystery; but it is at least certain, that whilst they cannot belong to the category of those which supply the fuel for the ordinary processes of combustion of which we are eye-witnesses, there is nothing in the nature of the products resulting from volcanic action inconsistent with the idea that metals possessing a strong affinity for oxygen, but not already combined with it, might, if they existed in the interior of the earth, be instrumental in producing the supposed combustion. And if we indulge in speculation, we might maintain with some show of probability that the bases of the earths and alkalies which constitute the present crust of the globe, would have existed originally uncombined with oxygen, and therefore they must at one time have been subjected to that very process of oxidation and combustion which we imagine to be at the present time continued. The author therefore suggested that volcanic action may be owing to certain chemical re-actions proceeding in the interior of the earth, between the constituents of air and water on the one hand, and the metallic bases of the earths and alkalies on the other. After developing this theory, the paper concluded with pointing out a practical use to which the waste waters of the thermal springs of this city might be applied, suggesting that if, instead of being discharged at once into the river, they were first conveyed through underground pipes a few feet beneath the surface, within a given area, the warmth imparted to the soil would prove highly favourable to the culture of tender exotics, and, moreover, if the ground were further protected from the cold by a glass roof, a winter garden might be obtained with scarcely any expense beyond that of the original outlay.

'Note on some of the Constituents of the Oil known as Crude Paraffin Oil,' by Dr. PAUL.

SECTION C.—GEOLOGY.

President—J. PHILLIPS.  
Vice-Presidents—Sir W. LOGAN, EARL OF ENNISKILLEN, Prof. HARKNESS, W. SANDERS, Rev. W. SYMONDS, Prof. H. D. ROGERS.  
Secretaries—H. C. SORBY, W. PENGELLY, W. B. DAWKINS.

Committee—D. T. Ansted, Sir W. Armstrong, W. H. Baily, E. W. Binney, C. C. Blake, H. Brady, Prof. B. Bell, A. Brady, Rev. C. H. Cholmeley, Dr. Daubeny, R. Etheridge, R. A. Eskrigge, G. A. Evans, F. Grand, F. Green, Prof. G. Green, G. J. Green, Prof. T. R. Jones, J. W. Lubbock, J. E. Lee, J. Leckenby, W. Lightbody, Sir R. I. Murchison, C. Moore, G. H. Morton, G. W. Ormerod, F. R. Polwhele, Prof. W. B. Rogers, C. E. Rose, H. Seeley, H. C. Salmon, W. S. Sanford, W. F. Stoddart, W. Warrender, Sir W. W. Willughby, Prof. T. Woodward, Prof. H. B. Wootton, W. Vicary, H. Woodward, Rev. H. W. Winwood, J. W. Woodall, Rev. T. Wiltshire, W. Whitaker, G. S. Worthy, Dr. Wright, J. Yates.

THURSDAY.

The PRESIDENT said:—'The age of geological discovery is, by many persons, thought to have passed away with Hutton and Werner, Humboldt and Von Buch, Smith and Cuvier, Conybeare and Buckland, Forbes and De la Beche; and they regard as almost finished the honoured researches of Sedgwick, and Murchison, and Lyell. Yet in this very district, the most carefully examined, perhaps, of all the richly-fossiliferous tracts of England, our friend Mr. C. Moore is finding a multitude of interesting forms of life of the later Triassic age, and is thus enriching, in an unexpected manner, the Catalogue of Fossils in Britain. Nor is the practical application of our science less actively exercised. In this very district Mr. Sanders has just completed that admirable survey of the strata on the large scale of four inches to a mile, and showing every field, which is suspended before you. Sir R. Murchison has informed us of the further proof of the extension of coal under the Permians of Nottinghamshire; and at this very Meeting we receive through the same channel, from Mr. M'Kenzie, the news of the finding of an additional bed of coal in Australia, thirty miles from any former known site of coal, the bed being thirty-eight feet thick, and of good quality. Nothing is better settled than the series of great events in our geological history; yet even now we are rejoicing over the large addition made to this history by the discovery of the richly-fossiliferous beds of St. Cassian and Kössen, by which the Triassic Fauna is enlarged, and the means of comparing Palæozoic and Mesozoic life augmented by some hundreds of forms, including some genera of the older and others of the newer systems. The Director of the National Survey has decided to give to these strata in England and Wales a distinct colour on his map and a definite name. But a few years since the varied strata of marine and freshwater origin above the chalk were carelessly, if not contemptuously, classed as "superficial deposits"; now, they have acquired a large and regular history, embracing a great succession of organic life, in the sea and on the land, which is appropriately crowned by the works of intelligent man. Not long since, the "diluvium," or "drift," was merely an ill-understood basis for ill-considered speculation; now, we have classified its parts, have begun to survey the movements of land and sea which preceded and accompanied these latest superficial accumulations, and have even ventured to apply to them measures of time in a continuous chronology. The new problems opened by these researches, the inferences to which they lead, and the speculations which they suggest, require only to be named. How to explain the all-but-universal glaciation of the mountain regions of Europe, once, or perhaps twice, since the era of the Crag,—how to trace the course and limits of those gelid waters which, since that era, rose to half the height of Helvellyn and Snowdon,—how to account for the changes of Physical Geography which allowed hippopotami to be buried in the sediments of a Yorkshire river, troops of mammoths to crowd the Cotswold Hills, and the mingled remains of reindeer and man to fill the caverns of the south of France,—these and many more questions of equal importance occupy the attention of geologists, and give a special interest to the later geological periods. In each of these cases, and in all which come before geologists for interpretation, there is one general rule—we compare always the ancient phenomena with the most

similar As in er As in known case, —a from da from ye is great ground, the age in earlier varied, according of nature cycles of parti constant; stant; nearer these v long a less he parts o as to the geological leave o terrest and ju in ge inquir geolog and s and sy nesses tained carbon later appear in eve created Have assign deter life, which of c limit before quest and p have man the v our b to, a cave race ants or w earli vale the natu the mal to h hum pen vate is e kin act tem way cei my the less tio dre ha the in i sa bi th or

similar effects we can find of forces now in action. As in existing nature the amount of effect produced by known causes varies with the conditions of each case,—as the sun's effect varies from hour to hour, from day to night, from summer to winter, and from year to year,—as the force of moving water is greater or less according to the slope of the ground, and the sea's movement is modified by the age of the moon and the position of land,—so, in earlier nature, the combinations of phenomena varied, and the measures of effect were modified accordingly. In another point of view, the aspect of nature is found to be variable, and subject to cycles of change, periods of greater and less effect of particular forces which, in their own nature, are constant. The distance of the earth from the sun is not constant; the form of its orbit is not constant; it was not always, nor will it always be, nearer to the sun in winter than in summer. From these varied conditions, which are measured by long astronomical periods, cycles of greater and less heating effect on the earth in general, and on parts of it in particular, arise; so that speculations as to the causes of the differences of climate during geological periods are entirely incomplete if we leave out of view these real and definite sources of terrestrial vicissitude. Whether they are sufficient, and justly applicable to the facts established in geology, is a proper subject of deliberate inquiry. Among the facts put in evidence by geology regarding the former condition of the land and sea, none are so convincing of great change and systematic diversity as the remains of plants and animals. By appeals to these innumerable witnesses, conclusions of much importance are maintained, touching the greater warmth of the carboniferous land and the colder climate of the later Cainozoic seas. By the same testimony, it appears that over every part of the earth's surface, in every class of organic life, the whole series of created forms has been changed many times. Have we measured these changes of climate, and assigned their true physical causes? Have we determined the law of the successive variations of life, and declared the physiological principles on which the differences depend? No; the variations of climate must be further investigated, the limits of specific diversity more surely defined, before we can give clear answers to these critical questions. Late researches, partly archaeological and partly geological, both in England and France, have been held to prove the contemporaneity of man and the mammoth in the northern zones of the world. Have we, then, been too confident in our belief that the human period was long posterior to, and strongly marked off from, that of the cavern bear and the woolly rhinoceros? Did the races of hyena and hippopotamus remain inhabitants of Europe till a comparatively modern epoch, or was man in possession of the earth in times far earlier than history and tradition allow? The prevalent opinion seems to be that as variations of the forms of life are extremely slow in existing nature, for every case of considerable change in the predominant types of ancient plants and animals, very long intervals of time must be allowed to have elapsed. If in some thousands of years of human experience no very material change has happened in our wild plants or wild animals, or in cultivated grains, or domestic birds and quadrupeds, it is evident that no considerable changes of this kind can arise from such causes as are now in action without the aid of periods of time not contemplated in our chronology. Estimated in this way, the antiquity of the earth grows to be inconceivable—not to be counted by centuries, or myriads of years—not to be really compassed by the understanding of men, whose individual age is less than a century, and whose histories and traditions, however freely rendered, fall short of a hundred centuries. The whole human period as we have been accustomed to view it, is but a unit in the vast sum of elapsed time: yet in all those innumerable ages the same forces were seated in the same particles of matter; the same laws of combination prevailed in organic and in living bodies; the same general influences resided on the surfaces or governed the masses of the planets, in their ever-changing paths round the sun. All natural

effects are performed in time, and, when the agency is uniform, are in proportion to the time. And though the agency be not uniform, if the law of its variation be known, the time consumed in producing a given effect can be determined by calculation. Geological phenomena of every order can be expressed in terms of magnitude, as the uplifting of mountains, the deposition of strata, the numerical changes of the forms of life. The time required to produce these effects can be calculated if we know at what rate in time, whether uniform or not, they were produced: if we know not the true rate, but the limits within which it must have operated, the result of the calculation will have a corresponding uncertainty; if we have no knowledge of the rate, calculations are out of the question. In applying this general view to the history of the earth, philosophers of eminence in physical science have employed different considerations and obtained a variety of results. The conclusions of two eminent mathematicians, which have lately appeared, may be cited with advantage. A careful computation by Prof. W. Thomson, on selected data, which determine the rate of cooling of earthy masses, assigns ninety-eight million years for the whole period of the cooling of the earth's crust from a state of fusion to its present condition; so that, in his judgment, within one hundred millions of years all our speculations regarding the solid earth must be limited. On the other hand, Prof. Haughton finds, from the data which he adopts, 1,018,000,000 years to have elapsed while the earth was cooled from 212° F. to 122° F., at which temperature we may suppose the waters to have become habitable, and 1,280,000,000 years more in cooling from 122° F. to 77° F., which is assumed to represent the climate of the latter Eocene period in Britain. Computations of this kind cannot be applied, except on the large scale here exemplified, and they lose all their value in the eyes of those who deny the general doctrine of a cooling globe. Much as these periods exceed our conception, they appear to be in harmony with the results of astronomical research, which contemplates space, motion, and cycles of periods too vast for words to express, or numerals to count, or symbols to represent. The greatest difficulty in obtaining trustworthy results as to elapsed time is found where it was least expected—among the later Cainozoic deposits from rivers and lakes, and on the variable shores of the sea. This is the more disappointing, because within this period falls the history of the human race. Taking as its earlier limit the latest wide prevalence of glaciers in Europe, attempts have been made to measure its duration by several processes. Quite recently, Mr. Croll recalls attention to an astronomical cause of change of temperature—the varying eccentricity of the earth's orbit—by which, in a small degree, the total quantity of heat received in the earth in a year, and in a much greater degree the distribution of this heat on the opposite circumpolar spaces, are altered. The effect of this at particular epochs would be, on one hemisphere an approximate equality of summer and winter heat, on the other an augmented difference between them. If at the epoch of maximum eccentricity the earth was in aphelion during our winter, a great accession of snow might arise and be continued for ages, and glaciers have a large augmentation; under the contrary circumstances, less snow and shortened glaciers. To this latter condition the present state of the north corresponds; and by consulting the astronomical tables, it appears that a condition of extreme glaciation, dependent on the maximum eccentricity of the earth's orbit, cannot have happened within the last 100,000 years. This, it will be remembered, corresponds with the conjecture of our President regarding the possible antiquity of the fluviatile gravel-beds with flint implements at St. Acheul; and with the computation of M. Morlot, of the age of the oldest gravel cone of La Tinière on the Lake of Geneva, which he supposes to have followed the latest extreme extension of glaciation in the Alps. Quite a different conclusion, however, was presented a few years since by a German mathematician, Herr Adhemar, who, reflecting on the difference of mean annual temperature of the two hemispheres of the earth—

depending on the inequality of the half-yearly periods, our hemisphere having now the advantage of position—finds that within each half "tropical" period (about 10,500 years) snows would gather and glaciers thicken round one pole, to be afterwards melted while glaciation was spreading round the other. Thus, periodical deluges, at intervals of 10,500 years, are found by this inquirer to be part of the system of nature. The opinion, however, has long been growing among geologists that it is rather by rising and falling of the land, and displacement of the sea, that the alternations of snows and floods must be explained, which are admitted to have visited the mountain regions of the north. In Switzerland two great extensions of ice in former times have been traced by Escher and the eminent geologists of that country—the latter one corresponding perhaps to the age of our glacial drift. The melting of snow and ice in the valleys of the Alps is far more rapid under the influence of certain winds than by the direct effect of sunshine. Withdraw the hot Föhn for a season, the glaciers would renew their advance; let it cease, or lose its specific action for a century, the progress of the ice would be considerable. In many centuries the Rhone glacier might reach again to Sion, Ville-neuve and Lausanne; in many thousands of years all the valleys and lakes and borders of the Alps might be re-occupied by ice. Now the southerly wind, which so rapidly strips the Alpine peaks of their snow, draws its melting power from the hot northern tracts of Africa. Were these tracts again covered, as once they were, with an expansion of the Mediterranean, the wind would lose its excessive dissolving powers—snows would gather above, and glaciers extend below, to levels and distances now quite unattainable without some great physical change. Great physical change, then, is the inevitable antecedent to extensive glaciation and abundant dissolution of ice round the mountains of the north. Astronomical vicissitudes returning in cycles of long duration, changes of level of the land, expansions and contractions of the sea, deviations of the currents of the ocean, alterations in the prevalent direction and quality of the winds—whatever of these causes we assume, and however we combine them, it is evident that we are appealing from the existing order of nature and the present measures of effect in time, to some other combination of natural agencies, some other standard of physical energy. The conclusion is obvious. Inductive geology refuses to accept definite periods for phenomena produced under conditions not yet really determined. I will not, by any further observations, discourage you from exploring this attractive field of research, or restrain the freedom with which you will desire to discuss it. Only let me add, that to one fresh from the Alps—from the old Pfahlhausen of the lakes, and much older monuments of overspreading snow and gliding ice the later ages of geology and the earlier ages of mankind seem to be fairly united in one large field of inquiry. That it must be trodden with heedful steps, and demands all possible care in the scrutiny of facts, in the estimation of natural agencies, and in the choice of right measures of time, before the Pleistocene, Quaternary, or Human period can be said to be accurately known by natural phenomena, even in this the best examined part of the world, is obvious. But the same remark applies to every one of the many perplexing questions which have been considered by geologists. By following the same good processes of strict inquiry and cautious interpretation which have settled those difficulties, we may hope to settle this. Let every one join in the effort, and bring selected materials to the growing fabric; so that we may not erect a rude and barbarous cairn, the memorial of dead opinions, but construct a temple of well-fitted stones, in which we may worship with delight the God of Truth, and be followed in the same pleasing duty by many successors."

'A brief Explanation of a Geological Map of the Neighbourhood of Bristol and Bath,' by Mr. W. SANDERS.

'Measures of Geological Time by Natural Chronometers, with a Communication from M. Morlot,' by Prof. PHILLIPS.

'On the Conclusion to be deduced from the

Physical Structure of some Meteorites,' by Mr. H. C. SORBY.

'On the Family Eurypteridae, with Description of some New Genera and Species,' by Mr. H. WOODWARD.

'On the Geognostic Relations of the Auriferous Quartz of Nova Scotia,' by Mr. H. C. SALMON.

'A Notice of the latest Labours of the Imperial Geological Institute of the Austrian Empire,' by Mr. F. VON HAUER.

'Note on the Occurrence of the same Fossil Plants in the Permian Rocks of Westmoreland and Durham,' by Sir R. I. MURCHISON.

'On Changes of Relative Level of Land and Sea in South-western Devonshire, in connexion with the Antiquity of Mankind,' by W. PENGELLY.

#### SECTION D.—ZOOLOGY AND BOTANY.

President—Dr. J. E. GRAY.

Vice-Presidents—C. SPENCE BATE, PROF. BALFOUR, DR. DALBYNT, J. GWYN JEFFREYS, DR. J. D. HOOKER, REV. L. JENYNS, SIR J. RICHARDSON.

Secretary—H. PERCEVAL WRIGHT, H. T. STANTON, C. E. BROOME, H. B. BRADY.

Committee—Dr. R. A. PRIOR, PROF. R. BELL, C. CARTER, BLAKE, J. BECK, P. BENTON, J. CLARK, DR. S. COBBETT, DR. COLE, DR. COWARD, H. DAWSON, M. DAWSON, W. ELLIOTT, H. S. ELTON, DR. WILFRID PALMER, MARY GUISE, SIR W. JARDINE, DR. HEATON, REV. T. HINCKS, DR. KIRK, J. LUBBOCK, J. LECKENBY, DR. MÜLLER, R. M'ANDREW, T. T. MOORE, REV. A. M. NORMAN, PROF. PELISSON, T. G. RYLAND, PROF. ROLLESTON, W. SANDFORD, DR. J. SPEDDING, C. SPENCE BATE, SIR J. SWINSON, H. B. TRISTRAM, DR. W. TURNER, A. H. WALLACE, H. C. WATSON, G. S. WORTHY, T. V. WELLASTON, DR. WELWITSCH, DR. R. WIGHT, J. YATES.

THURSDAY.

The PRESIDENT said:—Before entering upon the special business for which the Section has been called together, viz., the consideration of the Reports to be presented upon various zoological and botanical subjects, and the reading of the papers submitted by the Members, I should wish to make a few general observations on some topics which appear to me to have an important bearing on the science we study, in the hope they may elicit some observations from the Members present. I should wish to make some observations on the subject of Public Museums. It may be well imagined that, having during the whole of my life been intimately connected with the management of what I believe to be, at the present day, the most important zoological museum in the world, it is a subject that has long and deeply occupied my thoughts; and it will also be readily believed that it is only after serious and prolonged consideration that I have come to the conclusion, that the plan hitherto pursued in their arrangement has rendered them less useful to science and less interesting to the public at large than they might have been made under a different system. Let us consider the purposes for which such a museum is established. These are twofold: first, for the diffusion of instruction and rational amusement among the mass of the people; and, secondly, for giving to the scientific student every possible means of examining and studying the specimens of which they consist. Now, it appears to me that, in the desire to combine these two objects, which are essentially distinct, the first object—namely, the general instruction of the people—has been to a great extent lost sight of, and sacrificed to the second, without any corresponding advantage to the latter, because the system itself has been thoroughly erroneous. The curators of large museums have naturally, and perhaps properly, been men more deeply devoted to scientific study than interested in elementary instruction, and they have consequently done what they thought best for the promotion of science by accommodating and exhibiting, on the shelves or the open cases of the museum every specimen which they possessed, without considering that by so doing they were overwhelming the general visitor with a mass of unintelligible objects, and, at the same time, rendering their attentive study by the man of science more difficult and onerous than if they had been brought into a smaller space and in a more available condition. What the largest class of visitors, the general public, want is a collection of the more interesting objects, so arranged as to afford the greatest possible amount of information in a moderate space, and to be obtained, as it were, at a glance. The students, on the other hand (and though these are undoubtedly the most important, they form but an infinitesimal proportion of the mass),—the scientific students require to have under

their eyes, and in their hands, the most complete collection of specimens that can be brought together, and in such a condition as to admit of the most minute examination of their differences, whether of age, or sex, or state, or of whatever kind that can throw light upon all the innumerable questions that are continually arising in the progress of thought and opinion. In the futile attempt to combine these two purposes in one consecutive arrangement, the modern museum entirely fails in both particulars. It is only to be compared to a large store or a city warehouse, in which every specimen that can be collected is arranged on its proper shelf, so that it may be found when wanted; but the uninformed mind derives little instruction from the contemplation of its stores, while the student of nature requires a far more careful examination of them than is possible under such a system. To consult such an arrangement with any advantage, the visitor should be as well informed with relation to the system on which it is based as the curator himself, and, consequently, the general visitor perceives little else than a chaos of specimens, of which the bulk of those placed in close proximity are so nearly alike that he can scarcely perceive any difference between them, even supposing them to be placed on a level with the eye, while the greater number of those which are much above or below this level are utterly unintelligible. To such visitors the numerous species of rats, or squirrels, or sparrows, or larks that crowd the shelves from all parts of the world, are but a rat, a squirrel, a sparrow, or a lark; and this is still more especially the case with animals of a less marked and less known type of character. Experience has long since convinced me that such a collection so arranged is a great mistake. The eye both of the general visitor and of the student becomes confused by the number of the specimens, however systematically they may be brought together. The very extent of the collection renders it difficult even for the student, and much more so for the less scientific visitor, to discover any particular specimen of which he is in quest, and the larger the collection the greater this difficulty becomes. Add to this the fact that all specimens, but more especially the more beautiful and the more delicate, are speedily deteriorated, and in some cases destroyed for all useful purpose by exposure to light, and that both the skins and bones of animals are found to be much more susceptible of measurement and comparison, in an unstuffed or unmounted state, and it will be at once apparent why almost all scientific zoologists have adopted for their own collections the simpler and more advantageous plan of keeping their specimens in boxes or in drawers, devoted each to a family, a genus, or a section of a genus, as each individual case may require. Thus preserved and thus arranged, the most perfect and the most useful collection that the student could desire would occupy comparatively a small space, and by no means require large and lofty halls for its reception. As it is desirable that each large group should be kept in a separate room, and as wall-space is what is chiefly required for the reception of the drawers or boxes, rooms like those of an ordinary dwelling-house would be best fitted for the accommodation of such a collection, and of the students by whom it would be consulted: one great advantage of this plan being that students would be uninterrupted by the ignorant curiosity of the ruder class of general visitors, and not liable to interference from scientific rivals. There are other considerations also which should be taken into account in estimating the advantages of a collection thus preserved and thus arranged. A particular value is attached to such specimens as have been studied and described by zoologists as affording the certain means of identifying the animals on which their observations were made. Such specimens ought to be preserved in such a way as to be least liable to injury from exposure to light, dust or other extraneous causes of deterioration, and this is best done by keeping them in a state the least exposed to these destructive influences, instead of in the open cases of a public and necessarily strongly-lighted gallery. Again, the amount of saving thus effected in the cost of stuffing and mounting is well worthy of serious consider-

ation, especially when we take into account the fact that this stuffing and mounting, however agreeable to the eye, are made at the cost of rendering the specimens thus operated upon less available for scientific use. All these arguments go to prove that, for the purposes of scientific study, the most complete collection that could possibly be formed would be best kept in cabinets or boxes from which light and dust would be excluded, in rooms specially devoted to the purpose, and not in galleries open to the general public; and that such an arrangement would combine the greatest advantage to the student and the most complete preservation of the specimens, with great economy in point of expense. This having been done, it is easy to devise the plan of a museum, which shall be the most interesting and instructive to general visitors, and one from which, however short their stay, or however casual their inspection, they can hardly fail to carry away some amount of valuable information. The larger animals being, of course, more generally interesting, and easily seen and recognized, should be exhibited in the preserved state, and in situations in which they can be completely isolated. This is necessary also on account of their size, which would not admit of their being grouped in the manner which I proposed with reference to the smaller specimens. The older museums were for the most part made up of a number of larger or smaller glass-fronted boxes, each containing one or sometimes a pair of specimens. This method had some advantages, but many inconveniences,—amongst others that of occupying too large an amount of room. But I cannot help thinking that when this was given up for the French plan of attaching each specimen to a separate stand, and marshalling them like soldiers on the shelves of a large open case, the improvement was not so great as many supposed; and this has become more and more evident since the researches of travellers and collectors have so largely increased the numbers of known species,—of species frequently separated by characters so minute as not to be detected without careful and close examination. Having come to the conclusion that a museum for the use of the general public should consist chiefly of the best known, the most marked, and the most interesting animals, arranged in such a way as to convey the greatest amount of instruction in the shortest and most direct manner, and so exhibited as to be seen without confusion,—I am very much disposed to recur to something like the old plan of arranging each species or series of species in a special case, to be placed either on shelves or tables or in wall-cases, as may be found most appropriate, or as the special purpose for which each case is prepared and exhibited may seem to require. But instead of each case, as of old, containing only a single specimen it should embrace a series of specimens, selected and arranged so as to present a special object for study; and thus any visitor looking at a single case only, and taking the trouble to understand it, would carry away a distinct portion of knowledge, such as in the present state of our arrangements could only be obtained by the examination and comparison of specimens distributed through distant parts of the collection. Every case should be distinctly labelled with an account of the purpose for which it is prepared and exhibited, and each specimen contained in it should also have a label indicating why it is there placed. I may be asked why should each series of specimens be contained in a separate case; but I think it most obvious that a series of objects exhibited for a definite purpose should be brought into close proximity and contained in a well-defined space, and this will best be done by keeping them in a single case. There is also the additional advantage that whenever, in the progress of discovery, it becomes desirable that the facts for the illustration of which the case was prepared should be exhibited in a different manner, this can easily be done by rearranging the individual case, without interfering with the general arrangement of the collection. I believe the more clearly the object is defined and the illustrations kept together, the greater will be the amount of information derived from it by the visitor and the interest which he will feel in examining it. Such cases may advantageously be prepared

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to show.—The classes of the animal kingdom by means of one or more typical examples of each class; the orders of each class; the families of each order; the genera of each family; the section of each genus; a selection of a specimen of each of the more important or striking species of each genus or section; the changes of state, sexes, habits and manners of well-known or otherwise interesting species; the economic uses to which they are applied, and such other particulars as the judgment and talent of the curator would select as best adapted for popular instruction, and of which these are only intended as partial indications. No one, I think, who has ever had charge of a museum, or has noted the behaviour of the visitors while passing through it, can doubt for a moment that such cases would be infinitely more attractive to the public at large than the crowded shelves of our present museums, in which they speedily become bewildered by the multiplicity, the apparent sameness, and at the same time the infinite variety of the objects presented to their view; and in regard to which the labels on the top of the cases afford them little assistance, while those on the specimens themselves are almost unintelligible. When such visitors really take any interest in the exhibition, it will generally be found that they concentrate their attention on individual objects, whilst others affect to do the same, in order to conceal their total want of interest, of which they somehow feel ashamed, although it originates in no fault of their own. I think the time is approaching when a great change will be made in museums of natural history, and have, therefore, thrown out these observations as suggestions, by which it appears to me that their usefulness may be greatly extended. In England, as we are well aware, all changes are well considered and slowly adopted. Some forty years ago, the plea of placing every specimen on a separate stand, and arranging them, in rank and file, in large glass cases, was considered a great step in advance; and it was, doubtless, an improvement on the pre-existing plan, especially at a time when our collections were limited to a small number of species, which were scarcely more than types of our modern families or genera. The idea had arisen that the English collections were smaller than those on the Continent, and the public called for every specimen to be exhibited. But the result has been that, in consequence of the enormous development of our collections, the attention of the great mass of visitors is distracted by the multitude of specimens, while the minute characters by which naturalists distinguish genera and species are inappreciable in their eyes. It was not, however, the unenlightened public only who insisted on this unlimited display, but there were also some leading scientific men who called for it, on the ground that the curator might be induced to keep specimens out of sight, in order to make use of them for the enlargement of his own scientific reputation, while the scientific public were debarred the sight of them, and that valuable specimens might be thus kept, as the favourite phrase was, in the cellars. But any such imputation would be completely nullified by the plan I have proposed, of placing all the specimens in the scientific collection in boxes or drawers appropriated to them, and rendering them thus at once, and readily, accessible to students at large. And I may observe that the late Mr. Swainson, who was the first to raise the cry, lived to find that it was far more useful to keep his own extensive collection of bird-skins in drawers, like his butterflies and his shells; and that most scientific zoologists and osteologists are now convinced that the skins of animals unstufted, and the bones of vertebrates unmounted, and kept in drawers or boxes, are far more useful for scientific purposes than stuffed skins or set-up skeletons. So also with reference to my proposal for the arrangement of the museum for the general public, I find that those who are desirous of exhibiting their specimens to the best advantage are gradually adopting similar plans. Thus, when Mr. Gould determined on the exhibition of his magnificent collection of humming-birds, he at once renounced the rank-and-file system, and arranged them in small glazed cases, each case containing a genus, and each pane or side of the case showing a small series of allied

species in a family group of a single species. When lately, at Liverpool, I observed that the clever curator, Mr. Moore, instead of keeping a single animal on each stand, has commenced grouping the various specimens of the same species of mammalia together on one and the same stand, and thus giving far greater interest to the group than the individual specimens afford. In some of the continental museums also I have observed the same plan adopted to a limited extent. In the British Museum, as an experiment, with the view of testing the feelings of the public and the scientific visitors, the species of the Nestor Parrots and of the Birds of Paradise, a family of the Gorillas, and of the Impeyan Pheasants, and sundry of the more interesting single specimens, have been placed in isolated cases, and it may readily be seen that they have proved the most attractive cases in the Exhibition. I now exhibit a case of insects received from Germany in which the plan I have suggested is fully carried out. You will perceive that in one small case, are exhibited simultaneously and visible at a glance the egg, the larva, the plant on which it feeds, the pupa, and the perfect moth, together with its varieties and the parasites by which the caterpillar is infested. Such cases representing the entire life and habits of all the best-known and most interesting of our native insects, would be, as I conceive, far more attractive to the public at large than the exhibition of any conceivable number of our allied or cognate species, having no interest whatever, except for the advanced zoological student. I will only add, that I am perfectly satisfied by observation and experience, and I believe the opinion is rapidly gaining ground, that the scientific student would find a collection solely devoted to study, and preserved in boxes and drawers, far more useful and available for scientific purposes than the stuffed specimens at present arranged in galleries of immense extent, and crowded with curious and bewildered spectators; while, on the other hand, the general public would infinitely better understand, and consequently more justly appreciate a well-chosen and well-exhibited selection of a limited number of specimens, carefully arranged to exhibit special objects of general interest, and to afford a complete series of elementary instruction, than miles of glass cases containing thousands upon thousands of specimens, all exhibited in a uniform manner, and placed like soldiers at a review.—I now turn to a very different subject, but one which has always occupied a considerable share of my attention, and on which a few observations may not be out of place on this occasion, viz. the acclimatization of animals. This subject, which has been favourite one with the more thoughtful student, appears all at once to have become popular, and several associations have been formed for the especial purpose of its promotion, not only in this country, but also on the Continent and in the Australian colonies. I may observe that the acclimatization of animals, and especially the introduction and cultivation of fish, was among the peculiar objects put forward by the Zoological Society at the time of its foundation nearly forty years ago, although, as we all know, it has been able to do very little for its promotion. It would appear, from observations that are occasionally to be met with in the public papers, and in other journals, as though it were a prevalent opinion among the patrons of some of these Associations, that scientific zoologists are opposed to their views, or at least lukewarm on the subject. But I am convinced that they are totally mistaken in such a notion; and that it can only have originated in the expression of a belief, founded on experience, that some of the schemes of the would-be acclimatizers are incapable of being carried out, and would never have been suggested if their promoters had been better acquainted with the habits and manners of the animals on which the experiments are proposed to be made. With other members of the British Association, I have received a reprint of the Rules of Nomenclature drawn up by Mr. Strickland and others, and printed in the Report of the Twelfth Meeting of the Association (1842), accompanied with a request to examine them carefully, and to communicate any suggestions to Sir W. Jardine, Bart. I can only repeat the sugges-

tion I made when the Rules were under the consideration of the Committee of the Natural History Section at Manchester, viz. that the term *acclimatization* has been employed in several widely different senses; firstly, as indicating the *domestication* of animals now only known in the wild state; secondly, to express the *introduction* of the domesticated animals of one country into another; and thirdly, the *cultivation* of fishes, &c. by the re-stocking of rivers, the colonization of ponds, or the renovation of worn-out oyster or pearl fisheries by fresh supplies. In conclusion, I would request you kindly to bear in mind that I have simply thrown these observations together in the hope of eliciting the opinions of my colleagues in the Section. My only desire is that we may all heartily concur in doing all that is in our power to render this and other institutions conducive to the increase of the knowledge, the happiness and the comforts of the people.

'Report of Experiments respecting the Development and Migration of the Entozoa,' by Dr. T. S. CORBOLD.

'Further Report on Shetland Dredging,' by Mr. J. G. JEFFREYS.

'Remarks on Styliifer, a genus of quasi-parasitic Mollusca, with Particulars of the European Species *S. Turtoni*,' by Mr. J. G. JEFFREYS.

'First Steps towards the Domestication of Animals,' by Mr. F. GALTON.

#### SUB-SECTION D.—PHYSIOLOGY.

President—Dr. E. SMITH.

Vice-Presidents—PROFESSOR DR. J. LEVY, DR. WILBRAHAM FALCONER, DR. T. HODGKIN, PROF. ROLLESTON.

Secretaries—J. S. BARTRUM, W. TURNER.

Committee—Dr. F. T. BOND, C. BROOME, PROF. BENNETT, DR. BOYD-COTT, DR. BROOKE, T. BALDING, DR. S. COBBOLD, DR. C. COLLINGWOOD, DR. E. CROUSE, DR. D. D. FEARNSIDE, DR. D. GIBB, DR. T. GORE, A. HAWKINS, DR. RADCLIFFE HALL, DR. HENRY, DR. K. KING, DR. D. D. LOGAN, DR. LEWIS, DR. T. NICHOLSON, DR. W. H. RANSOM, DR. B. W. RICHARDSON, A. B. SHEPHERD, REV. J. SLATTER, J. SODEN, DR. J. THURMAN.

#### THURSDAY.

The PRESIDENT.—after advertizing to the great number of poor-law dietaries in operation in England and Wales, owing to the want of superintendence by some competent public officer, and to the disease arising from a want of such control in the Army and Navy.—proceeded to detail at length the measures of one movement, which has of late years been introduced even with respect to the nature and quality of the diet and the mode of preparation. Particularly referring to the arrangements with respect to the army, he observed that they were now, in time of peace, as varied and economical as were to be found in a private family. He went at length into the question of the dietary of gaols and convict prisons, and contended that there were necessary deficiencies in the absence of proper scientific inquiry, which would adapt the food to the different classes and conditions of the persons. The dietary of hospitals and schools came also under review; the author particularly alluding to the insufficient diet provided at many cheap educational establishments for a period of life when the greatest attention was required to the proper nourishment, any neglect in that respect having a material effect upon the mental and physical conditions of the subject in later life. Touching upon the Banting system, he passed over the question of desirability of reducing the bulk of a given individual as a matter which must always be left to private judgment, and to be dealt with according to particular circumstances; but he thought it would be an evil to the nation, both bodily and mentally, if the system of reduction were to become at all general, and that, on the contrary, regarding the whole population, there was more need to add to than to lessen the weight of the body. His own experience was, that a very serious diminution of both bodily and mental vigour followed the working out of the plan. Analyzing the nutritive qualities of different kinds of food, bread-stuffs, sugar, fat, water, milk, cheese, tea, beer and cider, he took occasion in the course of his remarks to censure the practice common amongst farmers of feeding their pigs with milk, instead of selling it at a low price.

The Rev. J. SLATTER then read a paper 'On the Dietary of the Agricultural Poor,'—presenting the results of an inquiry into the dietary his poorer parishioners (in the southern districts of England),

made during the spring of the present year. The solid part of the diet consisted mainly of bread, more or less bacon, potatoes and other vegetables, occasionally cheese, butter or lard, and sugar. Bread constituted the bulk of the nutriment consumed by an agricultural population. Potatoes and vegetables could not usually be grown by the agricultural labourer upon his small patch of ground in sufficient quantities to insure a supply throughout the year. Cheese, butter, lard and sugar were valuable elements of diet; but rice and oatmeal were never used. Fresh meat was also wanting. Herrings were not uncommonly procured. Milk was, perhaps, the most serious want to be regretted. Tea was the ordinary beverage; beer was rarely drunk, except in a way injurious to health and morals, generally in a selfish indulgence of the man at the expense of his wife and children. The general household arrangement was to cook on the Sunday a piece of bacon, of which a small quantity was apportioned on that day to the children, but after the Sunday meal all that remained was eked out cold for the man's dinner, the children, and generally the woman, being without animal food during the rest of the week. The quantity of nitrogen supplied to the children was, as a rule, sadly deficient, and the quantity of nutriment taken by the parents was very inadequate for hard work. There were immense difficulties in the way of inducing the poor to amend their dietary, and the progress of philanthropic efforts in their education must be trusted to for the remedy. The advance of labour and the inclosure of commons have tended to deteriorate the diet of the poor; the one by diminishing the amount of offal parts of fresh meat, which it was once in their power to buy cheaply, and the other by diminishing the supply of milk, so desirable for all ages, but especially for young children.

'On the Various Forms assumed by the Glottis,' by Dr. G. D. GIBB.

'On a Supplementary System of Nutrient Arteries for the Lungs,' by Mr. W. TURNER.

'On the Action of the Nervous Tissue concerned in Perception,' by Mr. W. E. C. NOURSE.

#### SECTION E.—GEOGRAPHY AND ETHNOLOGY.

President—Sir R. I. MURCHISON.

Vice-Presidents—J. LUBROCK, Major-Gen. Sir H. RAWLINSON, J. CRAWFORD, Col. Sir H. JAMES, Dr. LIVINGSTONE, Major-Gen. Sir A. S. WAGHTH.

Secretaries—H. W. BATES, C. R. MARKHAM, Capt. MURCHISON, T. WRIGHT.

Committee—Col. Sir J. E. Alexander, J. Arrowsmith, Admiral Sir E. Belcher, C. H. Bracebridge, C. C. Blake, H. G. Bohn, Sir J. Bowring, Commander Borne, Capt. R. F. Burton, Sir Charles East, Capt. Dr. J. Davis, Dr. D'Urville, Dr. Duke, C. M. Doughty, Earl of Einniskillen, A. G. Findlay, Capt. Galton, F. Galton, Dr. G. D. Gibb, J. E. Gray, Dean of Hereford, Dr. J. Hooker, Dr. E. Davis, Rev. H. M. Scarth, F. Hindmarsh, M. D. Khrustaloff, Prof. Murchison, Prof. Sir J. Murray, Prof. M. M. Murchison, Dr. Moritz, Bishop of Natal, P. O'Callaghan, Col. Pinney, Capt. Bedford Pim, Sir J. Richardson, J. Reddie, A. S. E. Russell, Sir R. H. Schomburg, Col. Showers, Capt. Speke, Capt. Spratt, R. Spratt, Col. Sykes, MacDonall Stuart, Dr. T. B. MacDonall, Thomas, Rev. H. B. Tatham, A. R. Wallace, J. R. Watt, Col. Yercoleff.

#### THURSDAY.

The PRESIDENT, in opening the business of the Section, made some remarks on the progress of Geography during the last forty years.

'Notes on China, Mongolia and Siberia in 1863,' by Mr. A. MICIE.—Between August and December, 1863, the author travelled from China to England by the overland Siberian route. Thirty miles to the north-west of Pekin, the elevated land of North China is reached, its commencement being a precipitous mountain barrier, the road through which (the Nankow Pass) is quite impracticable for wheeled vehicles. About ten miles distant from this Pass the road crosses a second mountain ridge, at the summit of which is the plain of Chan-Kia-Kow, 2,500 feet above the sea. A lofty chain of mountains separates China from Mongolia at this point; the pass into Mongolia rises 2,500 feet in fifteen miles, but is easy travelling. The journey across the desert of Gobi to the Russian frontier town of Kiachta occupied nearly a month, the breadth of the waste being here about 600 miles. It is a vast sandy prairie; in some places the grass is rich and supports enormous herds of horses and cattle; in others the pasture is scant, but still capable of supporting sheep and goats; whilst some parts are so barren that camels only can live on them. There is not a tree to be seen in all this vast

expansive, but from 47° N. lat. and 108° E. long., where the desert, on this line of march, terminates, all the hills are thickly wooded and a most luxuriant, but, as yet, uncultivated tract, 200 miles in breadth, stretches to the frontier of Siberia. The Mongol tribes who are scattered over the region are a purely pastoral people, simple and hospitable. They barter their flocks and herds with the Chinese for cotton-cloth, tobacco and other necessaries, the only circulating medium used being brick tea. From the table-land of Mongolia there is a gradual descent of nearly 3,000 feet to Kiachta. The road thence to the provincial capital, Irkutsk, is very circuitous; a more direct route would be round the south end of Lake Baikal, but the country is so mountainous that it is only very recently that the costly enterprise of cutting a road has been entered on by the Russian Government, and this will take years to complete. When done, the necessity of crossing the stormy Baikal will be avoided, and the postal communication rendered free from the risks and delays that now take place. The depths of the lake have never been sounded; the water is clear and in the deep parts almost black. Siberia, generally speaking, remains a vast primeval forest, through which avenues have been cut to form roads. The soil is for the most part fertile, and the country blessed with numerous great navigable rivers. Steam-tugs are beginning to be introduced, and the author found steamers on the Irkutsk as high as the town of Omsk. The principal towns of Siberia are large, elegant and wealthy, and the country is generally prosperous, wanting only population to develop its natural advantages. Scholars and artists find occupation in the colleges and seminaries, which are liberally supported. The Sclavonic inhabitants are the descendants of exiles, but these were not necessarily of the criminal class. The freedom they enjoy and the opportunities of gathering wealth have elevated the character of the Siberian peasantry. The absence of serfdom has been the chief cause of their improvement, and its abolition in Russia proper may in course of time produce like results there; indeed, an improvement is already perceptible in the intelligence, self-respect and industry of the emancipated serfs. The electric telegraph has been carried as far as the town of Irkutsk, 3,800 miles from St. Petersburg. A branch line will shortly be erected from Irkutsk to Kiachta. The author could not reconcile the accounts he had read of the treatment of the Polish political exiles with what he saw in Siberia. He found them invariably received with the highest respect, both by government officials and the public generally. Being for the most part men of education, they at once take up their proper position in society. When a party of exiles arrive at the residence of a governor who has the disposal of them, they are generally at once introduced to his family and are put on a footing of free intercourse. Of those condemned to work in the mines many are never sent there at all, and those who are find the penalty generally mitigated. Siberia offers a fair field for the talents of the exiles; the road to fortune is open to them, and many rise to eminence.

'On the Physical and Political Geography of the Jordan Valley and Eastern Palestine,' by the Rev. H. B. TRISTRAM.—This was an oral discourse, in which the speaker communicated the chief results of his recent natural history exploration of Palestine. No signs of volcanic eruption were found in the neighbourhood of the Dead Sea and the Jordan Valley, and the statements of De Saulcy on these points were shown to be wholly erroneous. The depression of the Dead Sea was coincident with the synclinal line of the great system of inclined limestone strata of the region. The district of Moab was spoken of in most laudatory terms, as regards its climate and fertility; indeed, the whole Jordan Valley formed a tract of country entirely different as to its vegetation and animal life from the rest of Palestine. Its Fauna and Flora yielded many new species and showed quite an Indian type; the total results could not, however, at present be given, as the Flora was still being worked out by Mr. Lowe, the botanist to the Expedition.

'On the Western Shores of the Dead Sea,' by

the Rev. G. CLOWES, B.A.—The journey was performed in 1863 in company with four friends, under the guidance of Abu Dahuk, sheikh of the Jahalim tribe of Arabs. The party reached the shores of the Dead Sea through the Wady-ez-Zuweirah. Whilst crossing the broad plain which here stretches towards the lake, dead trees were observed standing in the water at some distance from the shore. Mr. Poole, in October, 1855, remarked the same thing; it is, therefore, more than probable that a permanent rise in the level of the sea has taken place of late years. To the north of the Wady-ez-Zuweirah, the party noticed the existence of three distinct parallel beaches, the highest lying at least fifty feet above the level of the sea, which removed all doubt that the Dead Sea was once much higher than at the present time, and therefore the old idea of the Cities of the Plain being submerged is untenable. At a place half a mile south of Ain Jidy, Mr. Clowes, whilst bathing and trying the buoyancy of the water, found that he was being carried by a strong current in a northerly direction. He suggested that this may either have been an eddy caused by the influx of the Jordan, or a movement produced by a spring in the bed of the lake. The analysis of a bottle of water collected at this point countenances the latter idea, for he had fortunately means of comparing it with that of a portion collected two days previously from the north of the lake:—

	Collected April 9th, half-mile S. of Ain Jidy.	Collected April 7th, from North shore.
Specific Gravity	1.1674	1.1812
Per-cent of Salts	20.54	21.58
Boiling point	106° 5 Cent.	108° Cent.

These analyses showed that the water collected at Ain Jidy was less dense and contained a smaller percentage of salts than that obtained two days previously at the north. These facts appeared most interesting in connexion with the question whether the supply of water from the known sources is sufficient to counterbalance the enormous evaporation constantly going on.

'On the Turcoman Tribes of Central Asia,' by M. VAMBÉRY.—The Turcomans are a predatory and nomad nation, inhabiting a large tract of country to the east of the Caspian Sea. As far as history records, they never appear to have been united in a single body. They are divided into *Khalks*, or tribes, each tribe consisting of numerous *Taife*, or hordes, and each horde into *Tire*, or clans. Naming only the principal divisons, we find—1. Tschandor, 12,000 tents, 2. Erszari, 50,000, 3. Alieli, 3,000, 4. Kara, 1,500, 5. Salor, 8,000, 6. Sarik, 10,000, 7. Tekke, 60,000, 8. Göklen, 12,000, 9. Yomut, 40,000: total number of tents, 196,500. Reckoning to each tent 5 persons, we have the sum of 982,500 souls. Amongst them there appears to be no single man desirous of commanding, or any individual inclined to obey. There is no trace of any such character as the Akszakal of the Turks, or the Sheikh of the Arabs. Yet there is no anarchy and fewer breaches of justice and morality amongst them than the other Asian nations of Asia. All is governed by a more potent sovereign—the 'Deb,' custom, usage. Religion has very small influence. They kidnap their co-religionists. The different tribes live in great mutual enmity, which is fortunate for Persia; for the union of this warlike people would be fatal to this latter country. Even when divided, they do not fear Persia, but they fear the discipline of their Russian opponents. The chief support of the social union is the firm cohesion, not merely of the particular divisions, but of the whole tribe. Every Turkoman, nay even the child of four years, knows the *Taife* and *Tire* to which he belongs, and points with pride to the power or to the numbers of his particular horde. The Turkoman is remarkable for his bold penetrating glance, which distinguishes him from all the nomads and townspeople of central Asia. The leading features in his life is the *alamann* or predatory expedition. The invitation to any enterprise finds him ever ready. The design is always kept secret, and as soon as his chief elect has received a blessing from the Mollah, every man springs into his saddle and betakes himself to the rendezvous. The attack is

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made either at midnight or at sunrise, and it needs great firmness on the part of the assailed to withstand a surprise of this nature. The caravans of Persians very seldom stand their ground; it is the terrible historical prestige of the Tartar of the north that robs the boldest of his courage. He who resists is cut down, and the rest are bound and taken into slavery. In domestic life the Turcoman is indolent. During his evening hours he loves to listen to fairy tales and to the songs of the Bakhachi or minstrel, who sings songs to the accompaniment of his dutara, a two-stringed instrument. The songs are mostly those of Makhdumkuli, the national poet, who died about eighty years ago. These songs are of peculiar interest as furnishing a pure specimen of the Turkoman dialect. Some customs are very remarkable, as but faint traces of them are found amongst the other nomads of Central Asia. For instance, the marriage ceremonial, where the bride, concealed from head to foot in a large veil, has to ride a race with the bridegroom, and often arrives at the goal sooner than the young nomad. The time when the Turcoman tribes left their original country, cannot be fixed with exactness. Some of them were already in the Eastern part of the desert on this side of the Oxus, at the time of the Arabian occupation. Others took possession of their present country, probably in the time of Dschengis Khan and Timour. The last rising of the Turcomans in mass occurred under Nadir Shah and Aga Mehem Khan, who, helped by these tribes and the Afghans, at the commencement of the last century shook Asia out of her slumber. They are, next to the Kiptschak, the most warlike people of Central Asia, and are, from their position, the guardians of the southern frontiers of the Asiatic Highlands of Turkistan.

'On the Ethnology of the Iranian Race,' by M. NICOLAS DE KHANIKOF.—Starting with the Aryan theory of the original identity of the Hindus and Iranians or Persians, the writer proceeded to answer the question, Where was the cradle of the Iranian family? by an investigation into some of their most ancient traditions, beginning with an analysis of the Vendidad, and the poems of Firdusi. The conclusion was that they were probably originally scattered to the north, west, south and east of the fertile valleys situated between the Hindu Koosh, the Cordilleras of Poughman and Koohi Baba, and of the well-watered plains of Herat, Seistan, and Kirman. The results of a careful examination of craniological types amongst the nations of these parts of Asia, partly confirmed this conclusion. The Persian blood, however, has been much improved by crossing, during more than 2,000 years, with various populations, but especially with Semites and Turanians.

'On Russian Trade with Bokhara,' by Mr. A. HIPPIUS.

#### SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

*President*—Dr. W. FARRE.

*Vice-Presidents*—Sir J. BOWRING, J. HETWOOD, THE MAYOR OF BATH, Right Hon. J. H. NAPIER, Col. SYKES.

*Secretaries*—F. PURDY, E. MACRORY, E. T. PAYNE.

*Committee*—Ansley, S. BROWN, H. G. BROWN, C. H. BRACEBRIDGE, J. BOWRING, E. F. BURTON, Prof. F. FARRE, J. P. FALLOWS, Major-Gen. HANNINGTON, Prof. HENNESSY, E. HILL, Dr. HOLDSKIN, Rev. Dr. HUME, W. GORE LANGTON, Dr. LEE, Prof. LEVI, H. MANN, THE BISHOP OF NATAL, DR. ORPEN, Rev. W. C. OSBORN, THE RECORDER OF BIRMINGHAM, THE RECORDER OF BATH, G. SENIOR, R. J. SPERS, Col. TORRENS, T. WEBSTER, R. WILKINSON, J. YATES.

#### THURSDAY.

THE PRESIDENT said:—Statistics is in its nature a science of the relations of numbers of men, and its laws are founded on the observations of mankind. There are two grand divisions of statistics; the first falling under the head of 'Population,' and the second under the head 'Property'—which is the subject also of Economic Science. Under 'Population' are discussed the races, sexes, ages, marriages, births, deaths, causes of death, the ranks, professions, and tenures of each people in a state; from their earnings the value of their life-work is deduced; certain acts are also investigated, such as baptisms, attendances at schools or at churches, votes at elections, crimes, punishments, diseases, and civil actions. Civil and military statistics constitute a capital chapter of this division. The statistics of 'Property' are divisible into two heads. First, that of the fixed property, including

land, mines, forests, manufactories, houses, roads, canals, and rivers; its basis is a map on a scale large enough to exhibit the quantities of every parcel of land, and the area of every dwelling-house; the holdings of land, its burthens, and transfers, naturally fall under this head. Under the second head falls the movable property, including live stock, ships, machines, goods, merchandise, and vendible products of all kinds. A due appreciation of the value of published facts is an element in all the sciences. Statistics is prosecuted, to some extent in every State; and in counties where observation is difficult, intelligence scarce, and facts fugitive, figures appear to be so essential that they are invented. It is evident that the statistics of Bath, for instance, which has 52,528 inhabitants, are, at least, as instructive as the statistics of Hesse Homburg, which has a population of only 26,817; while those of the 444,873 people of Somerset, the county in which we meet, are not a whit less interesting than those of, at least, 24 kingdoms and principalities in Germany, which fill the pages of that useful publication, the Gotha Almanack. Remarking that what statisticians wanted was a better co-ordination of their work, which might be accomplished by a Board at which the principal officers would be represented, the President went on to observe that another matter this Association may very properly urge is, Agricultural statistics, that we might know, approximately, in September, the produce of the harvest in Europe as well as in America, and the state of the live stock to supply the markets. The season has been extraordinary. What have been its effects upon the crops? Unfortunately the Government has nothing to tell us. English agricultural statistics are a complete blank; yet no one seriously doubts the utility of this question of the supply of food. It will enter largely into the commercial combinations of the next twelve months, and is one of the elements affecting the circulation. Upon the choice of units of weights and measures the President said our progress in no slight degree depends, and contended that one weight will not serve all purposes.

'Statistics of Crime and Criminals,' by the RECORDER OF BATH.

'Statistics of the Number and Occupations of Foreigners in England,' by Prof. LEVI.—According to the last Census there were 80,090 foreigners in England and Wales, being at the rate 0·041 to every 100 natives. That, however, was considerably less than the number of foreigners in France or the United States. In France, in 1861, there were 506,381 foreigners in a population of 37,386,313, and in the United States, in 1860, there were 4,136,175 foreigners out of a population of 27,489,461. Of the 84,090 foreigners in England and Wales 73,500 were Europeans, 9,500 Armenians, 500 Africans, and 500 between Asiatics and natives of other countries. Of the 73,500 Europeans 30,000 were Germans, 13,000 were French, 5,500 were from Holland, 4,500 from Italy, 5,000 from Norway and Sweden, 5,000 from Russia and Poland, 2,000 from Spain and Portugal, 2,000 from Belgium, and 2,500 from Denmark, and about 1,000 from Greece and Turkey. Fully one-half of the foreigners in England and Wales are located in London. Of the total number of foreigners in this country, 57,000 are males and 27,000 females; and of the 73,500 Europeans, 13,000 were under 20 years of age, but it was not to be supposed that they were all organ-boys. Prof. Levi proceeded to enumerate their occupations, and went on to show that England had been slow in appreciating the benefit of attracting foreign industry to her shores, and showed that though many of the disabilities that existed against aliens had been removed, they were still prohibited from becoming members of the Privy Council, and of sitting in the House of Commons, in deference to national susceptibilities. In France and the United States a more liberal principle is adopted. In conclusion, the Professor said there was something inherent in man which attaches him to the country of his birth, and which he cannot shake off, wherever he may dwell, and we may derive solid and valuable instruction from the study of those who are constantly around us, and who in their own persons exhibit to us all the

peculiarities, habits, and manners of many distinct races and nations which people this great and wide world.

#### SECTION G.—MECHANICAL SCIENCE.

*President*—J. HAWKISHAW.

*Vice-Presidents*—Sir W. ARMSTRONG, J. F. BATEMAN, Admiral SIR E. BELCHER, Capt. GALTON, W. FAIRBAIRN, Prof. RANKINE, J. SCOTT RUSSELL, C. VIGNOLE, Prof. WILLIS.

*Secretaries*—P. LE NEVE FOSTER, R. PITTS.

*Committee*—G. R. BURNELL, W. CARPMAEL, F. W. CONRAD, G. FAWCETT, R. B. GRANTHAM, J. OLDHAM, N. SCOTT RUSSELL, W. SMITH, J. L. STOTHERT, J. VERNON, G. REDFORD, R. ABERNETHY, W. FROUDE.

#### THURSDAY.

THE PRESIDENT opened the proceedings of the Section by reading a brief address as follows:—In rude ages men were willing to depend on brute force, or to eke out that force by implements of the simplest kind. As they advanced in knowledge and civilization, they sought for other and more complex contrivances, which were better calculated to add to their powers. Thus originated mechanics, and mechanical contrivances therefore multiply with the increase of the intelligence of mankind. Consequently, at no former period of the world's history have the subjects to which this Section is devoted assumed such magnitude and importance as they now do. And those who devote themselves to these subjects may rest assured that they labour in a field which is practically without limits, and in a soil that can suffer neither from exhaustion nor over-cultivation. They who have lived through the last thirty years have witnessed triumphs of ingenuity far surpassing those of the past, but which, in like manner, may be surpassed by the future. I am proud to belong to this Section, and deem it an honour to be called upon to preside over its sittings on this occasion. The papers read here treat of subjects which, from their nature, cannot be amongst the most popular, but they are second to none in utility. One of the objects of the British Association is to encourage and stimulate scientific pursuits; and stimulus is sometimes wanted even to the working qualities of Englishmen. We must take care not to fall behind other countries. We cannot forget that for some years we have had to go to Prussia for the steel tires of our locomotive engines, and that lately we have had occasion to seek locomotive boiler-plates in France. It is plain we cannot rest in our wonted superiority and slacken and grow idle. Even in Russia it is now proposed to put up works for the manufacture of steel with machinery, which is intended to surpass our own. We shall not, however, unless we become supine, suffer from the advancement and improvement of other countries, and the British Association is large enough in its sympathies to take pleasure in the advancement of science and art in every part of the globe.

MR. J. OLDHAM then read the Report of the Committee for making 'Tidal Observations in the Humber, the Trent, and the Yorkshire Ouse.' It appears that tidal observations were made at Hull, at Gainsborough-on-the-Trent, and at Goole and Naburn Lock, on the Yorkshire Ouse. Those at Hull were obtained by the Committee from the Dock Company's gauge at that place; those at Goole from that of the Aire and Calder Navigation Company; for those at Naburn Lock the Commissioners of the River Ouse Navigation gave the use of their tide-gauge; those at Gainsborough were made at a point on the town side of the river, about 300 yards below the bridge, from a gauge procured and erected by the Committee. The observations at each station were made at intervals of fifteen minutes, and extended over fifty-four tides, commencing at 12 o'clock at noon on the 9th of May, and ceasing at 12 o'clock at noon on the 6th of June of the present year. The books in which the whole of the observations were entered, are presented to the Association. The results of the observations were shown in a series of drawings by contour lines, the vertical lines giving the hours and minutes of the observed time of the tides in rising and falling, and the horizontal lines or divisions giving in feet and inches the observed height of such rise and fall. During the whole of the time the observations were being made the weather was not unduly influenced by either rain or wind, and therefore the tides were natural and of a regular character. The phenomenon as to the time of high

water above a certain point of the Hull Dock gauge, referred to in the last Report, is again verified, *i.e.*, when the tide has reached the 16-feet mark of the tide-gauge above the dock-sill, or 1.293 foot above the mean rise of the sea at Liverpool, it then in every tide wants exactly three hours to high water.

A discussion ensued, in which Messrs. J. F. BATEMAN, T. WEBSTER, W. PARKES, Prof. RANKINE, and Sir E. BELCHER took part, all agreeing as to the importance and value of such investigations as these, and suggesting the propriety of their being extended to other rivers and estuaries of the United Kingdom.

Mr. W. FAIRBAIRN then read a paper 'On the Mechanical Properties of the Atlantic Telegraph Cable.'—It appears that the Atlantic Telegraph Company, considering it essential to the public interest that the second attempt to submerge a telegraph cable across the Atlantic should not be left to chance, and that a close and searching investigation should be entered upon, and that nothing should be left undone that could be accomplished to ensure success, sought the advice of a committee composed of men of eminence and experience in the various branches of science and engineering involved in such an undertaking to advise the Company in the selection of a cable. For the satisfactory attainment of this object it was considered necessary, in the first place, To determine, by direct experiment, the mechanical properties of cables submitted for submergence in deep water; 2nd, To ascertain the chemical properties of the insulator, and the best means to be adopted for the preservation and duration of the cable; and 3rd, To determine the electrical properties and conditions of the cable when immersed, under pressure, at great depths. On the author of the paper devolved the duty of undertaking the first division of the inquiry, *viz.*, to determine, by actual experiment, the strengths, combinations, forms, and conditions of every cable considered of suitable strength and proportion to cross the Atlantic. A laborious series of experiments was instituted, and, in order to attain accuracy as regards the resisting powers of each cable to tensile strain, they were broken by dead weights, suspended from a crab or crane, by which they could be raised or lowered at pleasure. The weights were laid on 1 cwt. at a time, and the elongations were carefully taken and recorded in the table as each alternate fourth hundredweight was placed on the scale until it was broken. By this process we were enabled to ascertain with great exactitude the amount of elongation in 7 ft. 6 in. The result of the investigation was, the selection of the cable of Messrs. Glass & Elliott, which stood highest in order of strength. In this inquiry, upwards of forty specimens of cables have been tested in their finished state, and this might have been sufficient for the Committee to determine the best description of cable; it was, however, deemed advisable to investigate still further, not only the cable as a cable, but to test experimentally each separate part, in order that every security should be afforded as to the strength and quality of the material to be employed in the construction. With regard to the covering wires, constituting the principal strength of the cable, Mr. Fairbairn finds that with proper care in the selection of the material in the first instance, a judicious system of manipulation in the second, and a rigid system of inspection of the manufacture, a wire of homogeneous iron .095 inches diameter can be made of strength sufficient to sustain from 900 to 1,000 lb., with an elongation of .0068, or 68 10,000th parts of an inch per unit of length. This description of iron appears to be the most suitable for the Atlantic cable, as it combines strength with ductility, and may be produced at a comparatively moderate cost. It was also found desirable to test the separate strands of each cable as well as the wires themselves. For this purpose a number of strands similar to those employed in the manufacture of the different cables were produced, and the tensile breaking strain and elongations carefully observed and recorded. In order to ascertain whether the length of the lay of the hemp and Manilla round the strand was of that

spiral form which produced a maximum of strength, the yarn separated from the strand was also tested, and comparing the sum of the breaking strains of the wire and yarn separately, with that of the two in combination in the strand, the object by these means was approximately obtained. Another very important question arises in the construction of this cable, and that is, the strength of the core and its conducting-wire, and how it is to be protected under a pressure of 7,000 lb. to 8,000 lb. per square inch, when lodged at the bottom of the ocean. This appeared a question well entitled to consideration, and provided a properly insulated wire, of one or more strands, can, without any exterior covering, be deposited with safety at these great depths, it is obvious that the simpler the cable the better. Assuming, therefore, that gutta-percha is the most desirable material that can be employed as an insulator, it then resolves itself into the question, what additional covering and what additional strength is necessary to enable the engineer so to pay out of the ship a length of 2,600 miles, into the deepest water, as to deposit it, without strain, at the bottom of the ocean? This is the question the Committee had to solve, and for this very important object experiments were instituted. Regarding the circumstances bearing directly upon the ultimate strength of the cable, the Committee have arrived at the conclusion, that the cable No. 46, composed of homogeneous wire, calculated to bear not less than from 850 lb. to 1,000 lb. per wire, with a stretch of five-tenths of an inch in 50 inches, is the most suitable for the Atlantic cable. The following is the specification of No. 46 cable:—The conductor consists of a copper strand of seven wires (six laid round one), each wire gauging .048 (or No. 18 of the Birmingham wire-gauge), the entire strand gauging .144 inch (or No. 10 Birmingham gauge), and weighing 300 lb. per nautical mile, imbedded for solidity in the composition known as "Chatterton's compound." The insulator consists of gutta-percha, four layers of which are laid on alternately, with four thin layers of Chatterton's compound, making a diameter of the core of .464 inch, and a circumference of 1.392 inches. The weight of the entire insulator is 400 lb. per nautical mile. The external protection is in two parts. First, the core is surrounded with a padding of soft jute yarn, saturated with a preservative mixture. Next to this padding is the protective covering, which consists of ten solid wires of the gauge .095 inch, drawn from homogeneous iron, each wire surrounded separately with five strands of Manilla yarn, saturated with a preservative compound; the whole of the ten strands thus formed of the hemp and iron being laid spirally round the padded core. The weight of this cable in air is 34 cwt. per nautical mile—the weight in water is 14 cwt. per nautical mile. The breaking strain is 7 tons 15 cwt., or equal to eleven times its weight per nautical mile in water—that is to say, if suspended perpendicularly, it would bear its own weight in 11 miles depth of water. The deepest water to be encountered between Ireland and Newfoundland is about 2,400 fathoms, and 1 mile being equal to 1,014 fathoms; therefore  $1,014 \times 11 = 11,154$ , and  $2,400 = 4.64$ : the cable having thus a strength equal to 4.64 times of its own vertical weight in the deepest water.

Capt. D. GALTON wished it to be clearly understood that the duty of the Committee was to select the most suitable from those sent in to the company. It was no part of their business to devise a form of cable.—In reply to a question from Mr. F. JENKIN, Mr. FAIRBAIRN stated that in taking in elongations, care was taken to prevent untwisting.—Capt. SELWYN objected to a spiral covering combined with a straight internal wire as incompatible with security from disruption.—Mr. HAWKSHAW said no one would dispute that Capt. Selwyn was right in principle. The question was, could it practically be carried out? The best form of cable had not yet been arrived at. The failures, however, in the Malta and Alexandria cable, which he had examined, did not arise from the spiral and longitudinal combination, but from a chemical action on the iron covering, the wires presenting the appearance of corrosion, as if by an acid. No coating of iron would last in such a situation, and the only

remedy was to lay the cable wire in such a covering in another situation where such a corrosive action did not take place. It was no matter of surprise to him that the first Atlantic cable failed. A cable constructed as that was must fail. He and other engineers had previously told the company that such must be the case.

Admiral Sir E. BELCHER read a communication from Capt. DOTY, of the Confederate States Navy, 'On the Torpedoes used by the Confederate States in the Destruction of some of the Federal Ships of War, and the Mode of attaching them to the Rams.' The torpedo consists of a shell filled with explosive material, whether gunpowder or gun-cotton, and is carried under the surface of the water at the end of a bar attached to the stern of the ram or other vessel, projecting some ten or twelve feet. The bar has a slight sliding motion, by means of which the end of the bar within the vessel, as soon as the torpedo strikes the enemy's ship, acts on a simple mechanical arrangement, bringing the wires connected with the torpedo into circuit with a galvanic battery, causing the explosion of the shell. Such an engine of war, Capt. Doty states, having been attached to small wooden steamers, an attack was made by it against the Federal frigates New Ironsides and Minnesota, and so much damaged them by the explosion as to render them unfit for further effective service, till docked for repairs. It was also employed in like manner against the new sloop-of-war, Housatonic, attached to the Federal blocking-squadron of Charleston, which ship filled, and went down in eight minutes after the explosion of the torpedo under her counter. It is unhesitatingly asserted, by competent judges, that a vessel properly constructed for the use and application of the torpedo battery, and possessing superiority of speed, would prove a formidable antagonist against a number of frigates, armed with the heaviest metal, for it would, by advancing end on, present the least surface to their fire, and always under the most acute angles. An especial advantage which it possesses is, that it may be worked at all times; for instance, in a rough sea, when ordinary guns could not be used, while it may be employed with certain success, under cover of darkness, against an enemy's fleet, destroying, disabling, or driving them away from the coast altogether. Great economy, simplicity, and safety are, further, among the valuable and important qualities claimed for the submarine battery; neither the battery itself, nor the men working it, are in the least exposed, the apparatus being situated much below the line of flotation. Admiral Belcher proceeded to point out the superiority of such an engine of warfare over rams. A ram with a velocity of 10 knots overhauls and touches the stern of the vessel she chases, going at the rate of 9.4 knots—a half-knot velocity would not injure her opponent, although it might impair her steerage, and bring her broadside to operate on her, in all probability, at such close quarters, to her detriment. But a ram fitted with the means of projecting a simple shell under the counter, or into contact with the screw, would inevitably destroy, or at least so derange rudder and screw that her great work of executing the ram manoeuvre at right angles to her antagonist would no longer be matter of doubt; and surrender would, under such difficulty, doubtless result. The French and other foreign governments have approved of the plans of Capt. Doty. Our own Government ordered the examination of them by a scientific committee, and it has expressed approbation in an official communication.

Capt. SELWYN pointed out how valueless would be our system of armour-plating our vessels, which only extended six feet below the water line; and he advocated the importance of small twin screw boats as preferable in every way to large vessels.

Mr. W. FAIRBAIRN stated that the experiments of the Iron Plate Committee were now brought to a close, and the results were recorded in four Blue Books. The conclusion he arrived at from these experiments was, that no ship can be made to carry plates sufficient to withstand our guns, and it would probably be better to have no plating at all. We should thus have ships more lively in the

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The business of the Section concluded for the day with two papers by Capt. WHEATLEY, R.N., the one 'On Revolving Sails,' the other 'On Plated Ships and their Armament.'

#### FINE ARTS

**FINE-ART GOSSE.**—Fifty-six pictures, principally by old Dutch masters, which have been lent to the Department of Science and Art by Mr. Walter, M.P., are now arranged in the Gallery of the Kensington Museum which, until recently, contained the oil paintings of Mulready.

A marble bust of the late Sir G. C. Lewis, executed by Mr. H. Weeks, has recently been placed in Westminster Abbey. Room has been found for this work near the incongruous memorial of Sir E. Coote, and the singularly unmonumental statues of John Kemble and Sir W. Follett; these are in the western transept. Without expressing an opinion on the qualities of the new addition to the Abbey, we repeat our protest against the introduction to an edifice which is at once Gothic and a church, of sculptures that are neither monumental nor ecclesiastical in their style, and better fitted for a gallery than a place of worship. It is reported that the Dean of Westminster with the greatest reluctance yielded space for the new monument. We wish he had refused it in this case, and that he would do so in future with regard to all memorials which interfere with the uses and character of the structure committed to his charge. Is it not possible for the architectural profession to strengthen the hands of the Dean, by a representation of opinion on the subject? Why do the friends of our "illustrious dead" ignore St. Paul's as a receptacle for busts and statues? Is not the company of great men interred there honourable enough for anybody? In St. Paul's is plenty of room for sculptures; its conservators cry out daily for the means of decorating the edifice; there is nothing about it which is incongruous with memorials, such as really deface the Abbey, and would do so if there was room for any number of them.

The completion of the Cathedral of Manchester by the erection of the new tower is making rapid progress.

Last week we recorded the fact of another dancer having narrowly escaped death by fire, her dress catching at the footlights while she stumbled on the stage. Mdlle. Pancardi escaped, on this occasion, with a week's confinement, but the hands of a gentleman who saved her life were very severely burnt. Will any one state what are the advantages of illuminating the stage in the modern manner, from below, that is, so as to bring the intensity of the light, with full power between the spectator's eyes and the objects at which he looks,—to cast the shadows of every object in a manner which is not only the reverse of that which nature chooses, but actually contrary to the way in which the scene-painters represent their effects? Nothing is more absurd than this error; we see the painted shadows cast in the opposite direction to that of the actual ones, and this in scenes where illusion is the main object.

Had nature intended the human face to be illuminated from below, she would have shaped it so as to produce something quite different from the ugly mask-like look which results from the modern system of theatrical lighting. By this curious device, the features of a performer are put out of proportion with each other, the eyes are set in shaded cavities, the nose projects the wrong way, the upper lip is illuminated instead of having its thickness shaded, the eyeballs cannot but glare and glitter unnaturally, the chin loses its expressiveness, and the light and shade of the countenance is broken up. Lights arranged in the sides of, and above the stage, would not be liable to these objections; they would aid, instead of (as now) impeding the ventilation of theatres, and would insure audiences against seeing performers burnt alive before their eyes.

M. J. Lippelt, sculptor of the Schiller monument shortly to be erected at Munich, is dead. He left the monument nearly finished.

One of the subjects which has engaged the attention of lovers of Art is the diffusion of taste amongst the people. In order to effect this, it will be needful to produce cheap examples of good design, and to circulate them wherever there is a demand. If it be true that demand begets supply, we shall be doing service to those interested in this matter by pointing out where there is a natural desire for decorative works, one which is very insufficiently gratified at present, and such as, from the peculiar character of those so possessed, would in all probability seek examples of a grave and thoughtful, rather than trivial and vulgar order. We refer to the peasantry of North Wales, an eminently "religious" people. Pictorial art, cheaply and mechanically reproduced, has been very largely employed by various societies which concern themselves in spreading a knowledge of Scripture among "the lower orders" of these islands. Great hopes for the diffusion of a taste for sound Art, as well as moral and religious instruction, were entertained in behalf of M. Schnorr's "Bible Pictures." Whether or not these examples were too scholastic or too "foreign" in their character, we cannot decide; we suspect that a third cause, *i.e.* their total lack of colouring, led to the disappointment of those hopes, so far as they referred to a vast circulation of the works in question in this country. Nevertheless, a large demand for illustrated Bibles exists, and testifies to the extent of the taste to which we have referred in England. These are not decorative works, and they are rarely examples of good Art fitly reproduced; still less valuable are the coloured woodcuts of Biblical subjects which have been published by one of the societies before alluded to. Neither of these works is to be met with in any numbers in North Wales, but, in their places, hosts of prints, pictures, woodcuts, highly-coloured plates and dishes, mugs, jugs, pots, "ornaments," glasses, cups, tureens, saucers, bottles, vases, basins, candlesticks and what-not, in short, everything of the sort which admits of colour, or aims at decoration. Whereas, in an English cottage, the tenant thinks himself lucky if his room is whitewashed once in two or three years, your Welshman neatly papers his walls, frames every engraving he can lay his hands upon, and carries his love for ornament to such an extent, that nothing is more common than to see a piece of brightly-coloured paper-hanging honoured with a frame. Blue willow-pattern plates are set out on the dresser, and a deeper blue background of paper given by way of setting them off. It is no uncommon thing to see fifty prints and a hundred pieces of coloured crockery in a labourer's cottage. The outside of that cottage will be coloured pink, red, buff, yellow, green, or chequered with any two of these hues; the very ridge-tiles often get alternate colours. The Welsh weavers rarely use patterns which are inharmonious in colour, or badly arranged,—in England the reverse is common. Are not these evidences of love of decoration and of pictorial art? Will some enterprising person endeavour to supply this people with examples of good design?

#### MUSIC AND THE DRAMA

**MUSIC OF THE WEEK.**—"Never ending, still beginning!" Matters seem fast approaching a point at which the demarcations of "season" and "no season" will be broken down, as regards music. Our overworked resident professors are already apprising their pupils, by the advertising columns of the *Times*, that their "breath of fresh air" is over;—our singers are advertising their meteor flights, by acquainting the world that the delicious ballad of "No matter what it be" will be sung on Monday at Tenby, on Tuesday at Twickenham, on Wednesday at Worcester, &c.;—while those who have to write the story of the days as they pass can hardly have given themselves up to the enjoyment of one hour's respite, ere some call, well-nigh as peremptory as "Master Barnardine, get up and be hanged," reminds them that Music taketh no rest,—that for them there is no "long vacation," unless they slacken their diligence, and thus run the risk of exposing that which deserves notice to the injustice of neglect.

To take London alone:—the *Gallery of Illustration* must not be overlooked, so merrily go the performances now running there—two chamber operettas—'The Sleeping Queen,' by Mr. Balfe;—and an adaptation of one of M. Offenbach's pieces of broad farce. The book to the first—derived from the opera 'Ne touchez pas la Reine,' set by M. Boisselot (we think), and played at our St. James's Theatre some years ago—is by Mr. Farnie, and a second time shows us that he has the right spirit for making such things well. In its condensed form, the story may be too abrupt in its transitions; but his dialogue is intelligible, without tiresome "quip and crank"; his verse nicely contrived and easy, clear of namby-pamby platitude or vulgarity, and judiciously varied as to rhythm. There is no one before the public who could do the work required better; and this Mr. Balfe seems to have felt, for "the light of other" and better "days" is in his music, which is sparkling, tunable and effective, worth a score of such scores as 'The Armourer of Nantes' and 'Blanche de Nevers.' Two of the terzets which it contains, as many of the songs, and a duett, somewhat after the "echo" fashion of 'Un bandeur,' in Grétry's 'Richard,' are among his best and least forced music. The work introduced a new lady—Miss d'Este Finlayson—who sings with a dash which is rather painful in a Court comedy where she has to personate a Queen, and who is more at home in M. Offenbach's farce. Miss Poole is, as usual, neat and intelligent; Mr. Wilkinson, as a self-seeking and amorous old grandee and prime minister, has improved greatly with practice.—The second tripe, 'Too many Cooks,' in which M. Offenbach has shown how a rude village blacksmith (Mr. Shaw) and a sentimental shoemaker (Mr. Whiffen) contend for the good graces of a tavern-keeper—also, what manner of soup came of their rival efforts and presents—is as merry and rattling a farce, set to music which, however slight, is excellently pretty, as we wish to see and hear. It is well sung and played throughout;—better than well, by Mr. Shaw; a gentleman with a face unmistakably set apart for low comedy, but who does not abuse it by grimace, and who "goes in" for all the roughness of manner in wooing and in war, for all the personal grime of the Auvergnat *Gargery*, in the true, uncompromising French fashion;—yet is never, by wink, word, or gesture, in the least coarse. A better bit of fun and farce we have rarely seen.

The advertisement of Mr. Mellon's "Gounod Night" at his Promenade Concerts must have inflicted twinges on those amongst us who, so lately as Easter, 1863, were jeering at the author of 'Sapho' as a charlatan, and at those who rated him among great composers as persons afflicted with a softening of the brain. This is the first "French night" which it has been found expedient to give; neither Boieldieu, nor Halévy, nor even M. Auber, having, seemingly, taken deep enough root in the sympathies of England to warrant the venture. Yet the theatre was very full—the "Gounod" act being made up of the overture to 'Le Médecin' and the "Bacchanal" from 'Philemon' (the delicacy of both which pieces, though calculated for a smaller theatre, did not prevent them from pleasing),—the grave song, 'Nazareth,' very finely scored by its writer, and sung by Mr. Thomas,—a selection from 'La Reine de Saba'—winding up with the magnificent March, the "Serenade" (charmingly sung by Madame Parepa, and *encore*), some pianoforte trifles, on too small a scale for the theatre, and Mr. Mellon's *pot-pourri* from 'Faust.' Every one has his own taste in selection; we might have preferred M. Gounod's Second Symphony, his overtures to 'Mireille' and 'La Nonne,' and the brilliant *ballet*-music of the latter opera. We advert to these pieces to indicate that there is no want of choice, if even, as on this occasion, the chorus is not called into play. The audience appeared thoroughly satisfied, so much so that the experiment was repeated on Tuesday and Wednesday evenings.

M. Jullien's Concerts, at Her Majesty's Theatre, began on Monday, with Mdlle. Liebhart as his vocal "star." His Danish auxiliaries are yet to come.

One of Mr. Martin's choral meetings will be held at the Crystal Palace to-day.

SADLER'S WELLS.—The regular winter season at this theatre commenced on Saturday, under the direction of Miss Marriot. As at most of the other houses, due attention, here much needed, has been paid to the auditorium; and the dress-circle has been accommodated with chairs, as more elegant and convenient than the ordinary seats which they have superseded. Miss Marriot announces that her management will be devoted to the legitimate and poetic drama. The piece chosen for the inauguration of the season was Mr. Knowles's very pathetic drama of 'Love'; and, on the whole, we may pronounce it to have been well sustained by the company. Miss Marriot, as the *Countess*, was, as usual, energetic and impressive. The important part of *Huon* was admirably sustained by Mr. George Melville, who is now engaged to lead at this house; and that of *Sir Rupert* was exceedingly well managed by Mr. C. Horsman. The character of *Catherine*, the serf, was prettily interpreted by Miss Ellen Beaufort. A new burlesque followed the play, founded on the opera of 'The Bohemian Girl,' and entitled 'Arline'; or, the Pole, the Policeman and the Polar Bear. It is a somewhat robust affair; and the puns, with which it is crowded, are of the most violent kind. There is, however, decided vigour in the composition; and, rude as it is, it promises to be attractive. Its authors are Mr. Henry Bellingham and Mr. William Best. It is, we believe, their first effort.

STRAND.—This theatre is now under the management of Mrs. Swanborough, and presents a most attractive interior. It has not only been re-decorated, but enlarged; and the dress-circle, furnished with chairs, resembles an elegant boudoir. The performances on Saturday were, the drama of 'Short and Sweet,' the burlesque of 'The Miller and his Men' and the farce of 'Where's your Wife?' Many novelties, however, are announced, both of persons and pieces.

SURREY.—A new melo-drama was produced on Saturday. It is entitled 'A Fight with Fate.' The hero, *Henry Martindale* (ultimately discovered to be the Marquis of Ormond), sells to Mr. Wilson, a money-lender in Somersetshire, two thousand pounds worth of family jewels, and takes with him the money. Soon after Mr. Wilson is murdered by a *roué*, named *Lionel Davis* (Mr. E. F. Edgar); and Martindale, having been the last person known to have been in his company, is arrested on suspicion, convicted and transported. Escaping from the convict ship, he is taken on board the *Minerva*, commanded by *Capt. Belford*, where he is recognized, and treated as a felon. The ship, however, takes fire, and the heroic young man saves the captain's daughter, an African missionary and others, from the wreck. Arriving at a desert island, the missionary weds the lady to her preserver. Here the party remain some time unmolested, except by a gorilla, who gambols occasionally in their presence, and puts them to some annoyance. At length, they are visited by the crew of another vessel and *Capt. Belford*, who is indignant that his daughter should have married a felon. In the consequent contest that takes place Martindale is seriously wounded, but the pious missionary takes care of him; and shortly afterwards all the characters are separated by the shock of an earthquake. A volcano is seen in the perspective pouring the burning lava down its sides; and thus ends the third act. The fourth act shows the captain comfortably settled with his daughter, who has had a child, which the stubborn old man expresses his intention to provide for, thinking the father to be dead, on condition of her consenting to marry Mr. Lionel Davis, who presents to her the very diamonds which he had stolen from the murdered Wilson. But Martindale arrives on the spot, recognizes his wife and the diamonds, and denounces Davis as the assassin. The missionary, too, has found Wilson's pocket-book, containing the receipt for the money; so that Martindale is acquitted, and Davis given into the custody of the officers of justice. Mr. Fernandez, as Martindale,

acted with much picturesqueness and power, and, particularly in the last scene, was strikingly effective. The scene of the ship on fire, and that of the eruption of the volcano, were both managed with an elaborateness and skill which will go far to make the piece popular as one of those stage spectacles in which modern audiences appear to take so much delight.

MUSICAL AND DRAMATIC GOSSIP.—As the weeks go on the prospects of English Opera in London are discussed with more and more animation, and a wilder and wilder variety of promises; one half of which, it may be assumed, cannot be performed. We are told that Miss Leffler is to resume her place as *contralto* to the Pyne and Harrison company; that Herr Reichardt is engaged for Her Majesty's Theatre. Then, there is a mysterious talk of Herr Adam, "a great German tenor"; news of whose greatness has till now escaped us, unless he prove to be the American gentleman, Mr. Adams, mentioned in the *Athenæum* some weeks ago as having tried his fortune at the Berlin Opera, and without any striking result won from an audience easily pleased with inferior singing. More certain is it that Mr. Hatton's re-setting of 'Le Val d'Andorre' (a courageous proceeding, it will seem, to those who are acquainted with the highly-finished and characteristic music of Halévy, as yet by no means forgotten or antiquated), is to be one of the Covent Garden operas during the coming season.—Mr. Duggan has finished an opera.—"They say" now that Mr. Santley will possibly not go to Barcelona. Any soprano who is to alternate duties with Miss L. Pyne is not yet named.—But, most unaccountable of all is the one certainty, regarding which there seems to be no question. Are we English caring for theatrical music or not? It would appear as if we are, since we find Mr. Buckstone "baiting his hook" with that respectable curiosity, 'The Castle of Andalusia';—since the Music to 'Macbeth' is expressly put forward as an attraction, side by side with Mr. Phelps as the solemn *Thane* and Mrs. Martin as the classical *Lady*;—since Mr. Burnand, in taking up the management of the Royalty Theatre, expressly contemplates, it is said, to bring forward musical trifles in the style of those which have given "Les Bouffes" at Paris its speciality.—It would appear as if we are, from the study of every provincial paper we take up, in eight cases out of ten, criticizing some wandering opera company singing 'Il Trovatore.' How comes it, then, that the most sanguine of projectors (best assured as to the power and beauty of "native talent"),—the most composed of speculators, who cares for nothing save the treasurer's book, seem agreed in only one plain truth—that the sole expedient by which the rival Opera-houses, avowedly arranged with designs on "high musical art," can "be pulled through," is—the Christmas pantomime! Our Continental neighbours may well laugh if they consider only this side of our purposes, gains and certainties.

Arrangements have been made, we believe, for giving 'Naaman' at Manchester and Liverpool early in the winter, under the conduct of its composer, Mr. Costa.

A Choral Festival was, we are informed, held the other day in Bangor Cathedral. Some 500 or 600 voices took part in it. The music was probably simpler than that produced on Tuesday week at Lichfield. There we find that the singers were some 1,400 in number; the music selected ranged between Tallis and Sir F. Ouseley, who appears to have special vocation (as we observed last year at Peterborough) for composing expressly with a view for these Festivals. In the paragraph from the *Times*, to which we are indebted for the above particulars, regret is expressed that music of another quality is not sometimes introduced; as, for instance, one of Handel's choruses. This suggestion, however well meant, is as much to the purpose as the indignation of an excellent musical friend, who, on being present at the gigantic *Männer-Gesang-Fest* at Cologne, in the 'Elijah' year (a collection of male *Liedertafel* societies), was aggrieved because nothing by Palestrina was performed there. That is no real connoisseurship, so much as a

desire to find fault, which would so openly disregard one of the greatest essentials to the progress of Art, whether sacred or profane,—we mean selection.—Handel's choruses (except it be a few in his Anthems) are but imperfectly fitted for the service of the English Church. True, they have been largely used there; sung by a handful of voices (sometimes with merely boys for *sopranis*, always without an orchestra);—but precedent "cuts two ways," as those who have suffered in church under "Rousseau's Dream" and Weber's "Softly sighs" (or any other secular tune of the time, no matter what,) must admit. We are clearly making some way, with occasional freaks and digressions on the part of zeal having small knowledge, to a more correct view of pertinence and distinction in religious art than our fathers possessed;—and thus it cannot be thought that we are splitting hairs or chasing shadows when we attempt to state a principle.

There has been, or is to be, a national festival at Swansea, where the *Cantata*, by Mr. John Thomas, 'Llewelyn,' will be repeated, this time with orchestra,—and where there will be also Welsh singing.

The theatre, all but completed, at Manchester, is to open its doors with 'The Tempest,' with Mr. A. S. Sullivan's *Shakspeare Music*.

Among other new instrumental works of some importance lately completed, by Continental composers, who have not passed the verge of musical sanity, we hear of a *Symphony*, by Herr Ferdinand Hiller, which is to be offered to our Musical Society.—A new *Pianoforte Trio*, by Herr Gade, his Op. 42 (Ewer & Co.), is before us, which it may be said from perusal, without fear of our being called on to retract judgment on hearing, is in its writer's usual manner,—expressive, elegant and vague, but somewhat monotonous.

Herr Ernst is at present in Paris.

M. Mermet's 'Roland' is "irrevocably announced," to quote the *Gazette Musicale*, as about to make its appearance at the Grand Opéra on Monday next. The same authority states that the complete copied score of 'L'Africaine' is ready; the parts by this time should have been distributed to the singers. The old story seems to be beginning again, in the form of those whispers and judgments concerning its music which used to keep curiosity alive during the long months of rehearsal and alteration bestowed by Meyerbeer on his French operas. Not a note, however, we are assured, of 'L'Africaine' has yet been seen, save by copyists. After some years of slack production, the Opéra Comique seems now to be breaking out into a fit of what may be called impossible activity. The following list of operas, proposed to be produced this winter, some of which we have already announced, is worth giving as a curiosity, and will be appreciated by those who are familiar with the habits of French dramatic preparation. Three acts, by M. Gautier; one, by M. Poise; three, by M. Gevaert; three, by M. Félicien David; three, by M. Cohen; three, by M. Thomas; three, by M. Bazin; and three, by M. Semet. A gorgeous promise this! recalling the programme of a certain Italian season in London, which announced a new opera by Meyerbeer; another by Mendelssohn; another by Signor Verdi. The engagements entered into in M. Carvalho's name are little less bewildering by their number. To the half-score already mentioned, we may add, a new opera, by Prince Poniatowski; a scene for two characters, by M. Grisar; and a version of 'Martha,' in which Madame Carvalho will appear. Madame Rey-Balla is engaged at the Théâtre Lyrique. It is now said that M. Mario will sing, not in Spain, but in Paris, during the coming winter; and that M. Bagier has engaged another tenor, Signor Brignoli, for the Italian Opera.

Marschner's 'Hans Heiling' has been revived at Berlin, an opera which passes for one of the best of his composer's works; and with his ('Vampyr' and 'Templer,' may be said to be alive (rather than to live) on the German stage. How this can be will seem strange to those who only know the music out of Germany, and who, like ourselves, must regard 'Hans Heiling' as an example of the most trite and second-hand combinations, the commonplace of

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which is concealed by a pretence at dreamy, dismal depth. Music of a certain cleverness, more totally devoid of freshness of idea or of style, has rarely, if ever, been written. In its acceptance, and that of similar works (the operas of Lindpaintner, for instance), lies the one explanation—though it be but a poor excuse—of the transient admiration of the vagaries of modern German ugliness as so many new revelations. 'The Sistine Madonna' (strange title for an opera), by Herr Conrad, is said to have succeeded at the Victoria Theatre, Berlin.

A young London musician of promise as a pianist and composer, Mr. Walstein, died a few days since, after a short illness. Had he lived, he might have done his art good service, if only as an example to those who imagine that the pretext of possessing imagination is an excuse in full for any failure in duty. We are told that in his last hours, when every one was aware that his end was drawing near, he would have the sheets of music on which he had been at work brought from his desk. They were proofs for correction and alteration. Those around him entreated him not to vex himself with any vain effort; but he quietly replied that he had been paid for the work by his publishers, and must complete it; and with his dying hands he did put the last touches and additions to the pages. There is much character in this simple anecdote; too much for it not to be recorded as a reason for more than ordinary regret.

## MISCELLANEA

*Stained Glass at Shrewsbury.*—St. Mary's, Shrewsbury, is now under restoration, and such of your readers, interested in "stained glass," as may be returning from North Wales, with the needful halt at Shrewsbury, can have the opportunity of examining many of the windows at the cleaner's. Those that have not been removed offer an instructive contrast between ancient and modern glass. One in particular, a professed imitation almost to copying, wholly misses that brilliant silvery white so remarkable in the old glass by its side. The great Jesse window of the early part of the fourteenth century is well known, and the story of its removal from St. Chad's. But there is another window on the Gospel side of the altar of great beauty, and so level with the eye that it may be studied in detail. The glass, executed in the sixteenth century, was formerly in the Abbey of Altenburg, and at its desecration was preserved in the Church of St. Severin, at Cologne, whence it was obtained by a former rector of St. Mary's. That beautiful Altenburg Church, near Strasshof on the Dhuine, now restored, has yet some glass which, if I recollect rightly, is of the very same character as this at Shrewsbury, probably recovered from the same custody, and the designs for which, like that, are attributed to Albert Dürer. Altenburg was a Cistercian Abbey, and the Shrewsbury window is filled with fourteen subjects from the life of St. Bernard, the legends of his miracles. The drawing is admirably correct, and the draperies with their foldings and patterns very beautiful, particularly in some veiled and wimpled figures. The colours of ruby, gold and blue most brilliant, like molten jewels, at once toned down and heightened by the clear silvery lights. The depth of the perspective is remarkable in two of the compartments; namely, the saint giving audience to an abbot, with workmen at the side rebuilding a church, and the reading with monks in their stalls, angels kneeling and listening in front. The story of the criminal taken by St. Bernard to his cloister is told with all the circumstances of the interrupted execution, also his visit to Guigo at the Grande Chartreuse. The conversion of Aloïde, sister of the Emperor Lothaire, the celebration of mass, with punishment of a scoffer, the healing the blind at Rheims in presence of the archbishop, are among the other subjects.

B. L. L.

To CORRESPONDENTS.—G. W. Y.—A. S.—C. C. C.—J. M. A.—R. A.—C. A. R.—Musicus—received.

D. Naples.—Our Correspondent will see in the *Athenæum* of the 10th that his obliging communication has been forwarded. We regret to be obliged to deny the request also contained in his letter.

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